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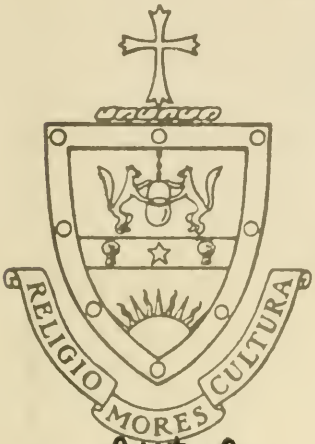
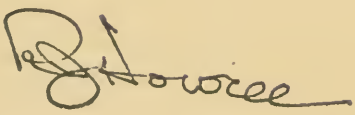


Gift of
Roger J. Howell



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James Ryan,

Ins[illegible] of Mines.

REPORTS

OF THE

INSPECTORS OF MINES

OF THE

ANTHRACITE COAL REGIONS OF PENNSYLVANIA,

FOR THE

YEAR 1882.

HARRISBURG:
LANE S. HART, STATE PRINTER.
1883.

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REPORTS

OF THE

INSPECTORS OF MINES

OF THE

ANTHRACITE COAL REGIONS OF PENNSYLVANIA,

FOR THE YEAR 1882.

POTTSVILLE, PA., *April 2, 1883.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

SIR: In compliance with the provisions of the second section of the act of 2d day of June, A. D. 1871, I have the honor of submitting the within report of the office of clerk of the mining district of Schuylkill, comprising the counties of Schuylkill, Northumberland, Dauphin, and Columbia, for the year ending 31st December, 1882.

A summary of total production of coal, number of employés, fatal and non-fatal casualties for the several divisions of the district, which are given in detail in the respective reports of the inspectors is hereto attached.

The monthly reports ordered by the court have been made regularly throughout the year. Through the courtesy and prompt returns of all engaged in the mining and shipping of anthracite coal, of the tonnage blanks mailed monthly to each operator, they are now as near accurate and reliable as can be had under the law creating the office of clerk.

These monthly reports were inaugurated at the commencement of my term of office, and for some considerable time were opposed by a majority of the operators, upon the grounds that it was prying into their private affairs or business, but as time elapsed, and the operators and clerk be-

came better acquainted, the former were convinced that it was not the purpose of the latter to expose their business nor to do them any injury, but that the design was to have on record in the clerk's office a complete and accurate history of each colliery in the district, its monthly output, number of employës, casualties and condition, and which records are becoming the more valuable to the mining district as each year adds to their number.

The monthly report to the court is but a summary of totals of these detailed reports of the several collieries.

To the operators and coal companies of the district, my most earnest thanks are tendered for their promptness in making returns, and aid they have rendered that has materially assisted me in properly and satisfactorily discharging the duties of the office.

Total amount of coal shipped to market, Pottsville division,	1,612,526.16	
Consumed or sold at colliery,	96,753.16	
Total production,		1,709,280.12
Total amount of coal shipped to market, Shenandoah division,	4,401,894.06	
Consumed or sold at colliery,	259,130.06	
Total production,		4,661,024.12
Total amount of coal shipped to market, Shamokin division,	4,329,054.00	
Consumed or sold at colliery,	259,745.04	
Total production,		4,588,799.04
Total production of Schuylkill district,		10,959,104.08
Increase for 1882,		192,222.03
Total number employés, Pottsville division,		6,632
Total number employés, Shenandoah division,		12,361
Total number employés, Shamokin division,		12,973
Total number employés, entire district,		31,966
Increase for 1882,		2,693
Average number of days worked by breaker, Pottsville division,		$182\frac{1}{2}$
Average number of days worked by breaker, Shenandoah division,		$227\frac{1}{4}$
Average number of days worked by breaker, Shamokin division,		$216\frac{3}{4}$
Avearge in entire district,		$208\frac{8}{10}$

Total fatal casualties, Pottsville division,		20
Total non-fatal casualties, Pottsville division,	91	
Total fatal casualties, Shenandoah division,		40
Total non-fatal casualties, Shenandoah division,	167	
Total fatal casualties, Shamokin division,		44
Total non-fatal casualties, Shamokin division,	182	
Totals,	440	104
Total fatal and non-fatal,		544
Ratio of tons per life lost,		105,376
Ratio of tons per person injured,		24,907
Ratio of employés to each life lost,		307
Ratio of employés to each person injured,		72

The expenses for the year 1882, for salary, rent of office, light, fixtures, postage, and incidental expenses, and for which vouchers were returned to Auditor General's office, amount to $1,900 14.

Very respectfully, &c.

EDWARD J. GAYNOR,
Clerk Mining District of Schuylkill.

FIRST DISTRICT.

OFFICE OF INSPECTOR OF MINES,
POTTSVILLE, *March 3, 1883.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

SIR: In compliance with the twenty-second section of a general act of Assembly, passed 1870, entitled "An act to provide for the health and safety of persons employed in and about coal mines," I have the honor of presenting to you my Eighth Annual Report as Inspector of Coal Mines for the year ending December 31, 1882. The last three, however, only represented my present or Pottsville district.

The matter contained therein consists of the usual tables relating to the loss of life and the serious personal injuries, together with the number of persons employed under and above ground; also the amount of coal produced by each colliery, the number of days worked, and such other information deemed of sufficient importance relating to the same subject.

It is much to be regretted that the onerous duty falls to our lot to report an increase in the list of casualties proving fatal to life, the loss being two more than that of the previous year.

COMPARATIVE STATEMENTS *of non-fatal casualties, showing the difference between the years 1881 and 1882.*

	1881.	*1882.*
Explosions of fire-damp,	41	7
Falls of coal and roof,	68	33
Crushed by mine cars,	34	14
Machinery on the surface,	2	1
Machinery underground,	—	—
Falling down shafts,	—	—
Falling down slopes,	—	1
Breaking of ropes,	—	—
Explosions of blasting powder,	10	6
Miscellaneous,	18	30
Totals,	173	92

TABLE *showing the amount of coal produced for the years 1881 and 1882, respectively.*

	1881.	*1882.*
Amount of coal shipped by rail,	1,726,088	1,612,526.16
Amount of coal used and sold at the mines.	103,566	96,753.16
Totals,	1,829,656	1,709,280.12

TABLE No. 2 *shows a comparison of the number of tons of coal produced, persons employed, lives lost, tons of coal mined per life lost, and number of employés per life lost.*

	1881.	*1882.*
Number of persons employed,	6,497	6,632
Number of tons mined per life lost,	101,647	85.464
Ratio of employés per life lost,	$365\frac{5}{10}$	$331\frac{6}{10}$
Number of tons mined per persons injured,	10,516	18.783
Ratio of employés per persons injured,	37	59
Average number of tons produced by each employé,	$281\frac{5}{10}$	$257\frac{71}{100}$

The following is a **COMPARATIVE STATEMENT** *of the loss of life and cause thereof for the years 1881 and 1882.*

	1881.	*1882.*
Explosions of fire-damp,	2	1
Falls of coal and roof,	5	6
Crushed by mine cars,	5	3
Machinery on the surface,	2	2
Machinery underground,	—	—
Falling down shafts,	1	
Falling down slopes,	—	1
Breaking of ropes,	1	
Explosions of blasting powder,	—	3
Miscellaneous,	2	4
Totals,	18	20

Non-Fatal Casualties.

Ninety-one (91) persons have been reported to me as being injured. The severity of the injuries may be seen by referring to the list elsewhere in the report, under its usual heading, with the remarks relating thereto.

Very respectfully submitted,

Your obedient servant,

SAMUEL GAY,

Inspector of Coal Mines.

Notwithstanding the large volumes of fire-damp given off, and its destructive character, it is a fact worthy of notice that out of twenty fatal casualities, but one of these was due to that element. It would appear from the foregoing table of analyses that falls are much more to be dreaded than the first-named element since the destruction of life arising from the former is twenty per cent. more than from the latter. The same line of reasoning is applicable to the several other classes of accidents resulting from other causes, viz: Mine cars and blasting powder. These two agencies combined added thirty per cent. to the death-roll, while another ten per cent. is chargeable to machinery on the surface, and five per cent. more to falling down slopes. The balance, or twenty per cent., is the result of various causes which are given in detail in the list of fatal accidents.

If the dangerous characteristics of the different sources to which these twenty human beings fell victims had to be measured by the number resulting from each source, such a comparision would lead us to the conclusion at once that fire-damp was greatly overrated when characterized as being the miners' most deadly foe. This, in our opinion, would be a mistaken idea since these results are not to be attributed to its less dangerous nature, but rather on the contrary, to the terrible scourge it inflicts when proper precautions are not taken to avoid the dreadful consequences which follow an explosion of fire-damp, since it does not confine its work of destruction to the place or person alone from whence it originated, but hurls its deadly missiles from one end of the mine workings to the other, causing its influences to be felt by the colliery officials as well as the workmen in general. Hence any rules and regulations relating thereto are much closer observed than in all other branches of mining combined, which operate with no less beneficial effect upon the reckless dispositions of the men employed, deterring them from running risks, which, in all other cases, they would look upon with impunity, although they prove to be no less dangerous when not properly respected.

As an illustration, imagine a man having a can containing from five to ten pounds of blasting powder which he holds in one hand, while in the other he holds a cartridge, into which the contents of the can are poured. At the same time a common miners' lamp lighted may be hanging on his head, also a lighted pipe in his mouth, and probably a half dozen fellow-workmen sitting in close proximity to where the operation is going on.

The most notorious case of recklessness, however, that has been brought to my notice, was exhibited by a man named Michael Garrity, in the Pine Forest shaft, which is three hundred and sixty (360) feet deep. Garrity had been employed at this colliery for a number of years as bottom man, his duties being to see that the cars were properly adjusted on the cage, also to attend the signaling from the bottom to the engineer. On the day in question the colliery was idle, with the exception of some repairing that was being done near the foot of the shaft. As there was no coal being hoisted, his regular attendance was not considered necessary. Therefore, a

mutual agreement was entered into between the engineer and himself, to hoist the cage if it was necessary without the usual signal from the bottom. At the time of this occurrence the engineer had occasion to hoist the cage. Garrity happened to be at his post at the shaft bottom, and, as the cage was being hoisted away from the bottom, he caught hold of the lower sill of the cage, clasping his arms around it. In this manner he was raised to the surface. Fortunately, a driver boy was near the foot of the shaft attending his mule, and noticing Garrity's light suddenly disappear, he ran to the speaking tube and called up to the engineer, telling him that Garrity was either standing or hanging on to the cage. Therefore, the cage was hoisted directly to the surface. When it arrived at the top, the man was found swinging underneath it, from which perilous position he was rescued. If the boy had not notified the engineer of what he suspected to be the condition of affairs, the cage would not have been raised to the surface, but only about one hundred feet up the shaft, which is about the distance from the dumping chute down to the level of the surface, where it was intended to stop the cage that was being lowered, until the material they were about to send down the shaft was placed thereon and secured, which would have required considerable time, so that in all probability he would have become exhausted, and would have fallen down to the bottom of the shaft, thus adding one more victim to the long list of so-called accidents.

It is not at all necessary for us to say here, that we could go on reciting many more instances of recklessness almost as glaring, of persons working under dangerous coal and rock, the handling of mine cars, and various other acts causing loss of life which need no further comment here, since the death-roll with the remarks thereon, should be sufficient to satisfy the most inquisitive turn of mind. We may say here, however, before closing the subject, that we are of the opinion that if the personal safety of those in charge of collieries was put in hazard to the same extent by all other elements, destructive to life and limb as they are by explosions of fire damp, the records of mining accidents would make quite a different showing as far as the number is concerned.

Often while remonstrating with those in charge of collieries against permitting the many reckless practices that daily come under their observation, we are told that as long as coal mining exists, we must expect to have accidents occur. It is true that there is, and always will be, a certain amount of what may be termed unavoidable risks of life and limb, whether in the mines or mills, or other places of employment in the great branches of industry. Nevertheless, the number of casualties will always be proportioned to the intellectual power of those directing the management of the different operations if all other things are equal. The earlier mine officials get rid of illusions, that the great sacrifice of life and limb, one year after another, is an indispensable consequence of coal mining, and

the sooner their attention is turned to improve the discipline of their employés, the more rapidly will the list of accidents be reduced to a minimum.

Underground Mine Fires.

In our last report we gave a short account of a fire that had taken place in the Wadesville shaft workings, stating also that it had been extinguished; however, before the report had left the printers' hands it was discovered that another fire was burning on the same gangway and near the site of the previous one. How long this fire had been in progress before its discovery we cannot say. However, since it was found near the face of an old abandoned breast that had been finished several weeks, it is more than probable that it was the result of a blower or jet of gas that had been burning in the gob from the time the place was last worked. As soon as the seat of the fire was located, strong efforts were made by the officials to reduce the flames by conducting a stream of water from the head of the shaft to the fire through a line of three-inch gas pipes. Unfortunately by the time this plan was sufficiently advanced to convey the stream into the burning material, the body of the fire had become so great and fierce that the small volume of water appeared to be intensifying rather than subduing the burning mass. It was therefore considered futile to make any further attempts to extinguish it in any other way than that of flooding the mine.

Lower Rausch Creek.

The second fire of any magnitude was discovered burning in an old breast in the above-named colliery, and was successfully extinguished by flooding a small portion of the mine where the fire existed. In order to accomplish this, two dams were built of brick and cement in a section of the main gangway where a solid pillar of coal had been left standing. After the dams were completed, in addition to the natural flow of water within the barriers, a stream was conducted to the fire through a line of three-inch gas pipe which connected with a sixteen-inch pump column, having a head of four hundred feet. In about twenty days the water rose above the elevation of the fire, successfully extinguishing it.

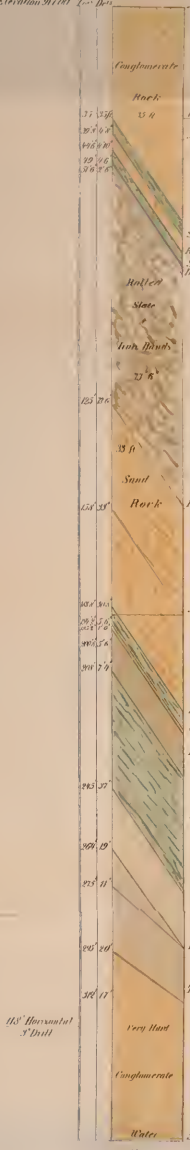
The Colket mine fire that has been burning since 187– in the East Mammoth vein was discovered to be burning with renewed energy. During last September, in consequence of this, four persons came near losing their lives by suffocation, resulting from the gases arising from the burning material. These four men were engaged in repairing the old water level tunnel by which opening the portions of the mine on fire are connected as are the other sections of the inside workings. Fortunately they were engaged near the mouth of the adit, or not more than thirty-five (35) yards in from open air. On this occasion Mr. Holland, the inside foreman, under whose supervision these men were engaged, made his usual visit to see how they were progressing with their work. Upon entering the tunnel mouth, to his astonishment, he found the four men lying helpless on the floor of the tunnel. Seeing the importance of prompt action, Holland threw his whole energy

into the work and carried them out into the open air, where fortunately they recovered. Had these men been employed at any considerable distance from the mouth of the adit, in all probabilities they would have died ere they could be rescued.

In order to ascertain the source of this renewed trouble an examination of the stoppings that had been previously built for the purpose of cutting off the supply of air to the burning part of the mines, was determined upon. On arriving at a short tunnel that connects the Four-Foot with the Mammoth vein, they discovered that one of the principal barriers was missing, and in looking through the tunnel the flames could be seen burning rapidly. In examining the tunnel, chips from a newly built stopping were laying scattered about unconsumed. The marks where a stopping had formerly stood were plainly visible, but no traces of fire had reached that point. This combination of facts raised the question as to what cause the destruction of the stopping could be attributed. These circumstances presented strong grounds for suspicion of malignancy. The company's officials, with many others, believed it to be the work of some malicious person or persons. Had we been satisfied to let our opinions on the subject rest on the facts as above given, we certainly should still hold a theory similar to many others. To get all the facts we could in reference to this stopping in question, we visited Mr. Jonathan Rionald, the former inside foreman, who had voluntarily resigned his position prior to the trouble, and took a similar position at Lower Rausch Creek colliery. The following is the statement given by Mr. Rionald to me personally, who said: "As soon as I heard of the fire starting anew, having received permission from Mr. Lewis, my present superintendent, I sent word to Mr. John McGuire, the district superintendent, saying, 'That if he thought my services would be of any benefit to him or the company, I would cheerfully come and render what assistance I could, or give any information in my power.' I made this proposition from the fact that Mr. McGuire and Mr. Holland were both new men at the colliery. However, my offer was not accepted. About the latter part of the year 1881 we had some hopes that the fire was about extinguished, and after a consultation with some of the company's officials, they consented to allow the opening of the battery. Upon its removal the presence of vapor and gases could be readily detected. This satisfied us that there was still fire within the old workings, and this was reported to Mr. John Veith, the company's inspector, who gave orders to have the tunnel again secured. I concluded to have the new stopping placed further in the tunnel than where the old one stood, which brought the new stopping closer to the scene of the fire. This was done to gain room to place a second stopping on the outside at some future time, so that the space between the two barriers might be filled with clay, which I considered would make the place much more secure than it would be if it depended upon the wooden battery alone; with this the district superintendent fully concurred."

Scale 20'– One Inch

Section of Kaska William Shaft.



Tide Elevation 3037
Supposed Level of Foot of Old Water 1sh Slope

No 2.

Dimensions and other data with Cross Section of Kaska William New Shaft.

By Mr Walter Church. Engineer

Furnished by Request of

Inspector of Mines

Dimensions of Shaft 20 by 12 Ft in the Clear Sunk 354 Ft in 8 Months an average of 4'4"3" Ft per Month Timbers of North Carolina Pine Used, 12"12" Buntons 12 × 8" Guides 4" 5" Shaft divided into 3 Compartments two for Coal and one for Water.

This statement fully explains the question of the chips as well as the traces left by the old stoppings, and I do not think it leaves any grounds whatever to rest the first conclusions on, viz: That of malignity. As far as Mr. Rionald is concerned we consider him to be a man of unimpeachable character and the facts here stated are undoubtedly correct.

Colliery Improvements.

Under the above head we have not a great deal requiring special notice, further than the carrying out of the several proposed schemes referred to in our last annual report. Among these was a new shaft to be sunk by the Alliance Coal Company at Kaska William. The actual sinking commenced below water level about the 1st of January. On the 1st of September, the shaft had reached a depth of three hundred and fifty-four (354) feet, which is about the same elevation above tide as the bottom of the old White Ash slope. At this point, the water pent up in the old workings began to flow through the fissures in the strata so rapidly that it overpowered the pumps in use, temporarily stopping further sinking until more powerful machinery was put in to raise the water. About the 1st of November, new hoisting engines were put into operation, and the water was raised in tanks. About the middle of the same month, the water had been lowered sufficiently to permit the Diamond Drill Company to commence operations for boring a three and a half inch hole horizontally through the measures, in order to tap and drain off the large body of water contained in the old workings. At a distance of one hundred and eleven (111) feet from the shaft, the boring apparatus struck into the old works, and the water rushed through the opening, filling up the shaft to the depth of two hundred feet inside of two hours. The hoisting machinery consists of a pair of powerful direct acting engines, with cylinders 24×60 inches, with cast-iron spiral drum, eight (8) feet in diameter, and were built by Mr. Robert Allison, of Port Carbon, whose name as a mechanical engineer is too well known to require any further comment as to the character of the work done at his establishment.

In connection with the new shaft, a breaker has been built, the capacity of which is from three to five hundred tons per day. It is already in operation, preparing the coal mined from the Buck mountain and Mammoth veins that have also been opened in the old North Dale tunnel.

This company has also sunk a new slope on the Diamond vein, seven hundred and fifty feet on an angle of 38° south dip, and immediately north of their present Palmer Vein Colliery. Both slopes are connected by a tunnel eleven hundred and sixty feet long; in fact, it is the same vein being worked on different levels. The whole production, however, is to be prepared in the present breaker, which will largely increase the output of the concern in the future. A new gravity plane has also been built, four hundred and thirty yards long, over which the coal from the new slope is carried down to the breaker.

Lehigh Coal and Navigation Company.

This company has opened a new colliery on their own lands during the year. It consists of a new slope, about one hundred and fifty yards deep, sunk on the F or Primrose vein. This colliery is located about three miles east of Tamaqua. So far as the openings have been extended, the coal has proved to be of a good quality, and from seven to twelve feet thick. The new breaker is built in close proximity with the mouth of the slope, and connected to it by trestle work, having the same angle as that of the vein on which the slope tracks are extended to the head of the dumping chute, where the cars are emptied without being detached from the rope. The whole of this work is of a very substantial character, which appears to be one of the main features in the affairs carried on by this company.

The old Foster or No. 2 tunnel which has been idle for a number of years, has again been put into active operation. The coal mined from this opening is conveyed to No. 11 breaker. A new fan, twenty-one feet in diameter, has been erected for furnishing ventilation.

Kalmia Colliery.

A new twelve-foot fan, of the Guibal type, has been erected at this colliery during the year, for the special purpose of ventilating that portion of the workings where the workmen are engaged in cutting and loading coal. It is situated about three and a half miles from the mouth of the tunnel, or main entrance of the mine. In consequence of the distance, together with the expense necessary for obtaining a water supply for generating steam, after considerable investigation, Mr. Phillips, the superintendant, determined to try the hot-air engine to furnish motive-power for running the new fan. The adventure, so far, has been a success. It is true that the air-engine is by no means a new invention; nevertheless we believe this to be the first time and place it has been applied in the anthracite coal region for direct mining purposes, and is of considerable importance to those interested in mining, since it is not an unusual occurrence about our mines to have to place engines at points where it is very difficult, as well as expensive, to find the necessary water supply for furnishing the required steam. However, where a sufficient supply of water is available at moderate cost, the steam-engine, being less complicated, is therefore more reliable, which should be the first consideration in mining affairs, especially in that of ventilation. Previously the whole inside workings were ventilated by two fans, located near the mouth of the tunnel. These fans are now used to ventilate the main gangway, in which three mine locomotives are used for transportation instead of animal power. The new fan, as before stated, is used especially to furnish the working-places with a fresh current of air, its inlet and out-let being independent of the openings that supply the main gangway.

Philadelphia Coal and Iron Company's Collieries.

The large body of water referred to in our last annual report, that had filled the old white ash workings for a number of years, was successfully

tapped and drained off through the present openings of the Otto colliery. It required five and a half months to accomplish the undertaking. During that time one hundred and eighty-two thousand two hundred (182,200) tanks of water were hoisted out of the two slopes. Each tank contained eight hundred (800) gallons. In addition to the above amount, a fourteen-inch pump, seven-foot stroke, running from six to seven strokes per minute, was kept in constant operation. The draining of these old workings has made a large field of coal accessible, which, in consequence of the water, had been sealed up for a number of years.

Eagle Hill Colliery.

The water has also been pumped out of the old Charter Oak slope, sunk on the Primrose vein, and is now being sunk one hundred and fifty (150) yards deeper.

Forrestville Colliery.

This old slope which has been idle several years was put into operation during the latter part of the year, and a new twelve-foot fan has been erected for ventilating it.

Glendower Colliery.

This operation has been lying idle during the greater part of the year, in consequence of the tapping of a large body of water that flooded the old Monterey slope workings that had been abandoned for a number of years. The draining of this old mine has relieved the employés of Glendower from all anxiety as far as a sudden inundation is concerned, and at the same time made a large body of fine coal accessible. The company is also pumping out the old Taylorville slope which adjoins the Monterey slope. When this is done the western end of the basin will be relieved of all standing bodies of water, which for years past have been an obstacle to mining operations in this basin.

Middle Creek Shaft.

The water has been taken out of these workings and active operations commenced, such as opening up the old gangways and driving new ones.

Richardson Colliery.

A new twelve-foot fan of the Giubal type has been erected here for the purpose of ventilating it.

New Boston Colliery.

An underground slope has been sunk on the Mammoth vein, opened on the eastern end of the basin.

Collieries Abandoned.

Pinedale colliery, located near Middleport, was abandoned during the year. It consists of a slope five hundred feet long, south dip, angle twenty-six degrees. West gangway is driven thirteen hundred feet and the east eight hundred feet. The bottom of the slope appears to be near the bottom of the basin. The vein irregular and dirty.

Future Danger arising from Old Abandoned Workings.

Although this subject may not be considered by many to be of sufficient importance to call forth any special notice, yet, notwithstanding what may be said to the contrary, it is our opinion that it will be a question of grave importance in the future mining operations of this district. We therefore deem it proper to lay the facts as they present themselves before our Legislature, in order that they may be enabled to take some steps whereby in the future many lives may be saved from destruction by inundation.

The section of coal field we desire to call the attention to, is that known as the Southern, embracing that portion extending from Tamaqua on the east to Tremont on the west, a distance of about thirty miles, running from the southern base of the Broad mountain on the north, and terminating with the outcrops in the Sharp mountain on the south, having a probable area of about ninety square miles. Within that area there are not less than two hundred old collieries below water level that have been partly worked out and abandoned. They were opened by shafts and slopes of various depths and angles. A large majority of the old workings are in the upper coal series, hence the opening up and operating of the lower coal beds will necessitate the sinking of deep shafts, which must eventually pass through or in close proximity to the old workings now filled with water. Out of the number of old abandoned mines before-mentioned, we may safely venture to say that from fifty to seventy-five per cent. were filled with water previous to the passage of the mine act of 1879, by which the owners or operators are compelled under the law to keep up semi-annual surveys of the workings, with maps and records of the same, to be deposited with the State inspector of mines for future reference. Previous to the passage of this act the whole of this region was operated by individuals, and but a very few surveys of the workings were made, and the number of records kept were fewer. In fact, there are to-day scores of these old openings with nothing to show whether they are ten feet deep or one thousand feet, or whether one foot or one mile of gangway has been driven. In many instances the mouths of the old workings have been so completely filled up as to leave no perceivable trace of where they had been originally located. Such are the circumstances, difficulties, and dangers to life and property under which many of the future operations of this coal field will be conducted, unless the legislation of our State takes some action in the matter, in order that some data and information may be collected, and put on record for future reference.

It is true that it is out of the question at this hour to make underground surveys or to get any correct data thereof. Nevertheless much valuable knowledge of these old workings may be gathered from the old miners or those who had charge of or operated them in the past. If nothing more than the length of slopes and shafts with an approximate distance of gangways driven east and west, also the number of seams worked, whether opened by tunneling or otherwise, such data in itself would be invaluable.

This class of information is attainable at the present time, and can be gathered from some of the old citizens still living, who have spent their lifetime here, and have grown up with the coal-mining interest of the region. If any of this information is to be collected it must be done quickly, as the old pioneers of the district are becoming less numerous as each year passes by, and it will be but a short period hence ere this source will be cut off forever. This information, with a topographical survey locating these old openings, would be a guide in future to those on whose lot it may fall to do the future coal mining in the Schuylkill valley. Whether this is part of the duties of the present Geological Survey Department we are not prepared to say. Should it not be within their jurisdiction, special instructions should be given with power to collect such information as is deemed necessary to further insure the future workings of the deep anthracite basin.

LIST OF ACCIDENTS RESULTING IN DEATH AND CAUSE THEREOF.

Explosion of Fire-damp.

Accident No. 1.—The only occurrence under the above head took place in the workings of what is locally known as Greenwood Colliery, No. 2, operated by the Lehigh Coal and Navigation Company. The victim was Thomas Parry, the fire-boss. In this case, however, there is no doubt but that the accident was the result of his own doings, brought about by entering a part of the workings with an open light instead of a safety lamp. Although others were injured, one of them seriously, yet, most fortunately, Parry's life was the only one lost by his own rash act.

Explosion of Blast.

Accident No. 7.—Thomas Morn, a miner, aged forty-eight years, was instantly killed at Dundas Colliery, No. 7, while in the act of applying his light to a match attached to one of the Daddow squibs. Whether he was ignorant of the consequences of shortening the match, we are not prepared to say. However, the testimony of his partner was that the deceased had broken off the match, and the result thereof was that he lost his life.

Accident No. 11.—Michael O'Brien, a miner, was instantly killed by the discharge of a blast while he was in the act of applying his light to a match. This accident also resulted from the shortening of the match, which act he was notified, as are all others, not to do.

Accidents causing Death resulting from Falls of Coal and Roof.

Accident No. 4.—Elias Shomper, a miner, was killed at the face of his breast, in Kalmia colliery, by a piece of coal falling off the face, caused by an unseen slip.

Accident No. 5.—Thomas Dunn, a miner, was killed at the face of his working place, at Eagle Hill colliery, by a piece of slate falling on him.

Accident No. 6.—James Furey, a miner, received injuries from which he died the following day; resulting from a fall of coal in a breast in No. 8 colliery. Operated by the Lehigh Coal and Navigation Company.

ACCIDENT No. 7.—David Hockter, an inside laborer, was fatally injured by a fall of coal in a breast in New Boston colliery.

ACCIDENT No. 18.—Robert Gilgore, a miner, was fatally injured by a fall of roof while he was working in a cross-heading in the Thomaston colliery; resulting through neglect in not properly securing the place with timbers.

ACCIDENT No. 19.—Patrick Colough, a miner, was killed at the face of his breast by a fall of slate in the Pottsville Shaft colliery. There is no doubt that had this unfortunate man exercised ordinary precaution, and examined his place before he commenced working, his life would have been prolonged.

Fatal Accident from Falling Down a Slope.

ACCIDENT No. 13.—David Williams, a miner, aged twenty-two years, met his death in the manner above stated while engaged at the Glendower colliery. The deceased with three other men had gone down the hoisting slope to put a water-tank on the track that had jumped off. After performing that work, not being able to detect what had caused the accident, Williams and his comrades concluded to remain down the slope near the water's edge in order that they might watch the tank as it was being raised out of the water, thinking that they could better detect any defect in the track, or ascertain the cause of the mishap. However, as the first tank was ascending the slope something fell from above the place where the men were standing. Whether it fell from the roof or was washed out of the bottom by the wastage of water, we were not able to ascertain. Nevertheless it is more than probable that Williams was struck by the missile, causing him to fall into the water, which was about twenty (20) feet deep. It would appear from the evidence of those in the slope with him that the first intimation they had of his fate was the finding of another of their co-laborers, named Ivor Jones, lying almost senseless in the slope with a death-like grip upon the rails, and was thereby saved from death.

Fatal Accidents arising from Mine Cars.

ACCIDENT No. 12.—Patrick Purcell, an inside laborer, died from the effects of having his leg crushed between a mine car, and a prop on the head of an inside slope at Phœnix Park colliery No. 2, caused by the car jumping the track.

ACCIDENT No. 13.—William Elliot, a driver on the dirt bank at New Boston colliery, was fatally injured by being thrown from the car on which he was riding, the wheels passing over his legs, crushing them so seriously that it resulted in his death.

ACCIDENT No. 16.—Commorgan Rine, a driver on the trestle work leading into No. 11 breaker, was so seriously squeezed between two cars, that he died the following day. At the time of the accident, no fear was entertained that it would prove fatal, from the fact that he was able to walk to his home.

Fatal Accidents resulting from Machinery.

Accident No. 9.—John Cahill, engineer of a stationary engine was killed, at New Boston colliery. He was found dead in the fourteen (14) foot ventilating fan. How he came there is still a mystery. However, it is probable that he had gone into that part of the air channel connecting with the ear of the fan, to see whether he could detect any default in the machinery. And in so doing, either himself or part of his clothing became entangled in some portion of the revolving machinery, and was thereby dragged into the casing, and crushed to death.

Accident No. 17.—Thomas Ryan, a slate picker, aged sixteen years, was crushed to death by falling under a revolving screen in the Thomaston breaker, where he was employed. This is one of the cases belonging to the list of accidents resulting from loose discipline and neglect. Had this part of the machinery been properly fenced in, this accident would not have occurred. However, the officials in charge of that breaker, set up the plea that the boy in going to that part of the concern had no business there, and in doing so was disobeying orders. That such orders had been issued, we have no reason whatever to doubt. However, it is quite evident from the testimony given at the coroner's investigation, that the same officials who had issued those orders had watched those boys for several months previous to the accident pass and repass the exposed place hundreds of times, without offering any remonstrance whatever against their doing it. Yet those men consider they have done their duty.

Fatal Accidents resulting from Various Causes.

Accident No. 3.—John Monday, an outside driver, aged fifteen years, was killed while taking a mule from the mines to the stable, at No. 11 colliery, operated by the Lehigh Coal and Navigation Company. The boy had mounted the mule's back, when, from some cause, the animal began to run away, throwing the boy off. In falling, the boy's legs became entangled in the traces, by which means the unfortunate victim was held and dragged to death.

Accident No. 10.—Charles Boyer, a dirt bank driver, aged sixteen years, was smothered in a dirt chute at the Kalmia colliery breaker. It appears that on this occasion the dirt had been partly drawn out of the bin, leaving an empty space between the body of the dirt and front part of the chute, which was not an unusual occurrence, as it often blocked up in this manner, and it had to be as frequently started again, generally by striking the bottom of the bin with a blunt instrument, which caused the dirt to rush down and fill up the empty space. In this case instead of the boy following the usual plan, he went to the top of the dirt to start it. Whether he merely jumped upon the dirt or employed any other means to start it we cannot say. However, it rushed away, carrying him down in the midst of it and burying him alive.

Accident No. 8.—Michael Martin, a miner, aged thirty-eight years, was so seriously injured at the bottom of a new sinking shaft at Kaska Wil-

liam, that it caused his death two days after the occurrence. The accident was the result of his being struck on the side of the head by a drill that a bankman let fall from his hand while he was attempting to put it into the bucket that was hanging over the mouth of the shaft.

ACCIDENT No. 15.—Dennis Blainey, an outside laborer, aged eighteen years, met his death at No. 8 colliery, operated by the Lehigh Coal and Navigation Company. This accident was caused by the breaking of a bolt, by which means a chain was secured to the end of a lever used in connection with a dumping apparatus on the head of the dirt bank. The breaking of the connection between the short end of the lever and the end of the car about to be raised, allowed the longer end of the lever to fall by its own gravity, striking the unfortunate man on the head.

ACCIDENT No. 20.—John Earnest Raymond, an outside laborer, aged sixty-five years, engaged by a man who had a contract to remove or strip off the surface from the outcrop of the Mammoth vein, near No. 8 colliery, operated by the Lehigh Coal and Navigation Company received fatal injuries, through a rather singular occurrence. The deceased had left the place where he was working, and had gone to take his dinner, as had all the other workmen, but they had taken a different direction because they had been notified that a blast would be fired as soon as they reached a place of safety. Sometime after, one of the workmen who had occasion to go home, happened to go the route taken by Raymond when going to his dinner. When but a short distance from the place where they were engaged, he found the old man lying on the ground, with his head on a projecting rock with his skull fractured. It was the supposition of those present that he had fallen with such force that his head striking the rock caused the injury. This may have been the case. But I am of the opinion that a flying missile from the blast struck him, although the theory of those that found him was not an unreasonable one, since the fractured part of the head was still resting on the rock, as though he had fallen there.

REGISTER OF FATAL CASUALTIES.

Date.	Names.	Collieries.	Occupation.	Age.	Married or single.	Children.	Remarks.
Jan. 9	Thomas Moran,	Dundas, No. 7,	Miner,	48	Married,	5	Killed; explosion of blast, resulting from igniting squib.
7	Thomas Parry,	Lehigh, No. 10,	Fire-boss,	45	Married,		Family grown up. Killed; explosion of gas.
Mar. 2	John Mundy,	Lehigh, No. 11,	Driver,	16			Fatally injured; dragged by mule.
April 18	Elias Shomper,	Kalmia,	Miner,				Killed; fall of coal.
June 29	Thomas J. Dunn,	Eagle Hill,	Miner,	50	Married,	9	Fatally injured; rock fell on his leg.
29	James Fury,	Lehigh, No. 8,	Miner,	30	Married,	4	Fatally injured; fall of coal.
July 3	David Koeber,	Middle Lehigh,	Laborer,	22	Married,		Fatally injured; fall of top coal.
27	Michael Martin,	Kaska William,	Miner,	38	Single,		Fatally injured; struck by drill at bottom of shaft.
Sept. 2	John Cahill,	Middle Lehigh,	Engineer,	25	Married,	2	Killed; caught in fan.
7	Charles Boyer,	Kalmia,	Driver,	15			Killed; smothered in the counter dirt chute.
8	Michael O'Brien,	Richardson,	Miner,	36	Married,		Killed; premature explosion of blast.
12	Patrick Purcell, senior,	Phœnix Park, No. 2,	Laborer,	57	Married,	6	Fatally injured by mine cars.
22	William Elliott,	Middle Lehigh,	Driver,	15			Killed by mine cars.
Oct. 12	David Williams,	Glendower,	Miner,	22	Single,		Killed; fell down slope.
25	Dennis Blaney,	Lehigh, No. 8.	Driver,	18	Single,		Fatally injured by being struck on the head.
Nov. 7	Comorgan Rine,	Lehigh, No. 11,	Driver,	18	Single,		Fatally injured; caught between cars.
22	Thomas Ryan,	Thomaston,	Slate-picker,	16			Killed; caught in machinery.
27	Robert Gilgore,	Thomaston,	Miner,	36	Married,	2	Fatally injured; fall of roof.
Dec. 4	Patrick Collough,	Pottsville Shaft,	Miner,	56	Married,	6	Killed; fall of slate.
27	John Ernst Rheman,	Lehigh, No. 8,	Outside laborer,	65			Fatally injured by blast.

DATE.	Names.	Collieries.	Occupation.	Remarks.
Jan. 7	Jacob Rumbach,	Lehigh, No. 10,	Loader,	Thigh broken in two places; explosion of gas.
7	Frank Boyle,	Lehigh, No. 10,	Loader,	Hip dislocated; explosion of gas.
9	Nathan Hauck,	Colket,	Miner,	Arm and hand injured by piece of coal.
10	August Orff,	Black Heath,	Miner,	Leg broken; fall of coal.
12	William W. Jones,	Thomaston,	Miner,	Breast injured; fall of coal.
14	Isaac Evans,	Lehigh, No. 11,	Driver,	Ankle dislocated; mule fell on him.
25	Theodore Newcomer,	Kalmia,	Loader,	Injured by blast.
26	Edward Kelly, No. 2,	Beechwood,	Laborer,	Head cut and hip injured; struck by piece of top slate.
26	John Murphy,	Mine Hill Gap,	Miner,	Thigh injured; fall of coal.
Feb. 1	John L. Evans,	Rausch Creek,	Miner,	Injured by a slip of coal.
3	Adam Long,	Lincoln,	Door-boy,	Shoulder and chest injured; crushed between mine car and mule.
13	Christ. Brode,	Lehigh, No. 10,	Loader,	Leg broken while starting a battery.
10	James Barren,	Lehigh, No. 11,	Carpenter,	Finger bruised; bar fell on it.
14	William Alber,	Lehigh, No. 11,	Loader,	Back and breast bruised; squeezed between car and door-frame.
23	Edward Hantz,	Lincoln,	Miner,	Leg broken, while dressing loose coal after blast.
March 14	Jacob Daubert,	Lincoln,	Miner,	Hips injured; fall of coal.
22	Henry O'Brien,	Lehigh, No. 8,	Laborer,	Shoulder dislocated; fell about ten feet.
23	Martin Pendergast,	Thomaston,	Top-man,	Head crushed; boiler was pulled beyond mark.
April 3	John Reilly,	Pottsville Shaft,	Laborer,	Back bruised; fall of coal.
19	John Evans,	Ellsworth,	Driver,	Arm broken; caught between wagons.
24	George Batzer,	Pine Forest,	Driver,	Arm bruised; wagon run over it.
25	William Emes,	Lehigh, No. 8,	Slate picker,	Hand bruised; caught in machinery.
28	Isaac Plummer,	Pine Forest,	Miner,	Hands and face burned by explosion of gas.
May 6	John P. Jones,	Richardson,	Miner,	Ribs injured; fall of coal.
9	Lawrence Murphy,	Thomaston,	Miner,	Back injured; piece of coal struck him.
12	James Scott,	Richardson,	Starter,	Leg burned; spark from his lamp ignited a piece of dynamite in the leg of his boot.
12	Hugh Brady,	Phœnix Park, No. 2,	Miner,	Hip injured; piece of coal struck him.
16	Theodore Morgan,	East Franklin,	Laborer,	Arm and leg bruised; caught between wagon and timber.
16	Martin C. Egan,	Beechwood,	Driver,	Arm broken; jammed between wagon and collar.
22	Ben Reese,	Mine Hill Gap,	Miner,	Slightly burned; explosion of gas.
23	John L. Willliams,	Mine Hill Gap,	Oiler and coupler,	Head bruised; caught between wagon and gangway timber.
31	Thomas W. Jones,	Thomaston,	Miner,	Face and hands burned.
June 1	Albert Kleckner,	Lehigh, No. 11,	Loader,	Head cut; struck by a piece of slate.
2	John McHugh,	Mine Hill Gap,	Miner,	Hip injured; fall of coal.
6	Michael Fitzpatrick,	Mine Hill Gap,	Stable boss,	Hands burned by turpentine.
14	John W. Benner,	Kalmia,	Loader,	Squeezed between bumpers of two wagons.
16	John Stein,	Swatara,	Miner,	Leg broken; caught between piece of coal and prop.
21	Thomas Lonergan,	Phœnix Park, No. 3,	Laborer,	Back injured; fall of coal.
23	William Pendergast,	Thomaston,	Miner,	Foot injured; caught in dirt plane machinery.
26	Michael Rorke,	Eagle,	Miner,	Arm fractured; fall of coal.
July 1	Robert McElvany,	Eagle Hill,	Miner,	Ankle dislocated; fall of coal.

July	1	Walter Leonard,	Thomaston,	Driver,	Foot injured; nail run into it.
	1	Michael Brennan,	Pottsville Shaft,	Laborer,	Finger cut off by mine car.
	1	John Kemra,	Eagle Hill,	Miner,	Knee injured; struck by piece of coal.
	3	William Fessler,	Lincoln,	Miner,	Body burned by powder ignited by his lamp.
	6	Patrick Purcell,	Thomaston,	Driver,	Foot injured; kicked by a mule.
	8	Thomas M. Thomas,	Lehigh, No. 8,	Driver,	Body injured; squeezed between mine cars and door in gangway.
	10	Thomas Daubert,	Colket,	Miner,	Face and head cut; fall of top coal.
	14	Henry Kimmel,	Lincoln,	Driver,	Body injured; fell under mine cars.
	18	Patrick Welsh,	Palmer Vein,	Miner,	Arm broken and head cut; fall of slate.
	24	John Morgan,	Otto,	Teamster,	Leg broken; mule kicked him.
	28	John William,	Richardson,	Miner,	Head and body bruised; fell down manway.
Aug.	7	George Edwards,	Lehigh, No. 11,	Train-boy,	Thumb mashed while coupling cars.
	15	Henry Boland,	Lehigh, No. 10,	Miner,	Slightly injured; fall of coal.
	16	John B. Gallagher,	Lehigh, No. 10,	Miner,	Slightly injured; fall of coal in chute.
	17	Frederick Stevens,	East Franklin,	Boy,	Arm broken; slipped on piece of coal.
	25	Gerald Fitzgibbons,	Pine Forest,	Fire-boss,	Hip and arm bruised; thrown betwen cars.
	25	George Broadbeck,	Lehigh, No. 11,	Carpenter,	Thumb cut off; hopper plate fell on it.
	31	Thomas Mount,	Richardson,	Miner,	Toes cut; struck himself with an axe.
Sept.	5	William H. Koons,	Lincoln,	Teamster,	Body injured; fell off mule.
	8	Thomas Wilde,	Palmer Vein,	Miner,	Body injured; fall of rock.
	8	John Dalley,	Palmer Vein,	Miner,	Leg broke; fall of rock.
	13	Alfred Brown,	Kalmia,	Miner,	Body injured; fall of coal.
	13	Thomas McNamara,	Otto,	Laborer,	Body injured by earth falling on him.
	14	John Kelly,	Mine Hill Gap,	Miner,	Hand, face, and breast injured; premature explosion of blast.
	16	Michael Daly,	Eagle Hill,	Laborer,	Back injured; fall of coal.
	25	Daniel Hoy,	East Franklin,	Miner,	Back injured; fall of slate.
	25	John Krebs,	Pine Forest,	Miner,	Back sprained; fell upon his back on gangway rail.
Oct.	2	Evan Gray,	Richardson,	Driver,	Leg bruised; caught between car and prop.
	6	James McDonnell,	Lehigh, No. 10,	Inside foreman,	Seriously burned, } Explosion of gas.
	6	William E. Jones,	Lehigh, No. 10,	Fire-boss,	Slightly burned, } Explosion of gas.
	6	Rodger Rodgers,	Lehigh, No. 10,	Miner,	Slightly burned. } Explosion of gas.
	11	Samuel Fleming,	Lehigh, No. 10,	Rock bank boss,	Slightly injured; rock fell on him.
	16	Andrew Porter,	Lincoln,	Laborer,	Leg broken; struck by piece of coal from blast.
	23	James Devlin,	Richardson,	Miner,	Hand, head, and back injured; premature blast.
	26	Frederick Simmindinger,	Rausch Creek,	Miner,	Thigh and leg broken; struck by piece of coal.
Nov.	2	John Frew,	Otto,	Miner,	Head and breast injured; fall of slate.
	11	Charles Remaley,	Lehigh, No. 11,	Carpenter,	Leg injured; screen fell on it.
	13	Patrick Hughes,	Mine Hill Gap,	Miner,	Hands and neck burned; explosion of gas.
	13	James McDonald,	Pottsville Shaft,	Driver,	Arm injured; run over by empty wagon; amputated.
	13	Michael Conners,	Mine Hill Gap,	Miner,	Hands, face, and neck burned; explosion of gas.
	25	John Meehan, No. 1,	Middle Creek Shaft,	Laborer,	Breast injured while helping to remove a rail from wagon.
	25	W. J. Boles,	Lehigh, No. 8,	Laborer,	Toe cut off; piece of slate struck him.
Dec.	4	William Toward,	Colket,	Miner,	Body squeezed; fall of dirt and rock.
	4	John McGeehan,	Lehigh, No. 8,	Laborer,	Leg broken by piece of clay falling on it.
	6	David Rinbolt,	Lehigh, No. 10,	Driver,	Knee injured; caught between mine cars.
	6	Cornelius McCole,	Lehigh, No. 8,		Slightly injured by some clay falling on him.
	6	Morgan Jones,	Phœnix Park, No. 2,	Repairman,	Leg broken; piece of coal fell on it.
	8	Joseph Spitzner,	Rausch Creek,	Miner,	Leg broken; struck by lump of coal.
	14	Charles Dands,	Phœnix Park, No. 3,	Miner,	Leg broken; a lump of coal struck him.
	18	Thomas Kenedy,	Glendower,	Miner,	Foot injured; a spike run through his foot.

RECAPITULATION OF FATAL CASUALTIES.

Explosion of fire-damp,	1
Explosion of powder and blasts,	3
Falls of coal and roof,	6
By mine cars,	3
Machinery on surface,	2
Fallen down slope,	1
Miscellaneous,	4
Total,	20

RECAPITULATION OF NON-FATAL CASUALTIES.

Explosions of fire-damp,	7
Explosions of powder and blasts,	6
Falls of coal and roof,	33
By mine cars,	14
Machinery on surface,	1
Fallen down slope,	1
Miscellaneous,	29
Total,	91

NUMBER EMPLOYEES, COAL MINED, DAYS WORKED, &c., FOR THE YEAR ENDING DECEMBER 31, 1882.

COLLIERIES.	OPERATORS.	NUMBER OF EMPLOYEES.			Number of kegs of powder used.	Number of days worked by breaker	Number of tons of coal shipped.
		Inside.	Outside.	Total.			
Beechwood,	Philadelphia and Reading Coal and Iron Company,	132	51	183	685	151⅛	31,920.09
Colket,	do. do.	69	64	133	400	235¼	31 484.08
East Franklin,	do. do.	62	61	123	160	203½	25 051.19
Eagle Hill,	do. do.	164	106	270	1 025	233⅜	69 811 10
Forestville,	do. do.	84	58	142	460	87⅛	11 443.00
Glendower,	do. do.	30	22	52	140	5¼	1,220.12
Mine Hill Gap,	do. do.	189	125	314	2,400	194½	51,540.09
Middle Creek,	do. do.	90	50	140	275	50¼	4,872 00
Otto,	do. do.	118	79	197	210	61	11,422.09
Phœnix Park, No. 2,	do. do.	61	49	110	705	234	32,963.18
Phœnix Park, No. 3,	do. do.	88	47	135	1,135	251¼	20,676.03
Pine Forest,	do. do.	135	90	225	800	159	32,468.02
Pottsville Shaft,	do. do.	198	102	300	475	238¾	42,625 19
Swatara,	do. do.	42	44	86	835	233¼	41,725.05
Richardson,	do. do.	160	103	263	1,810	237¾	66.381 00
Thomaston,	do. do.	242	137	379	3,435	199	70 784.06
Wadesville,	do. do.	5	31	36	255	36⅝	15,233.04
Black Heath,	William H. Harris,			40			6 245.03
Ellsworth,	John R. Davis,	29	15	44	410	273	15 036 00
Eagle,	George W. Johns & Bro.,	95	59	154	1,022	137¼	28 594.07
Kalmia,	Phillips & Shaefer,	265	100	365	5,400	282	201,100.05
Lincoln,	Levi Miller & Co.,	278	147	425	4,900	253	165 678.07
Rausch Creek,	Miller, Graeff & Co.,	117	106	223	150	225	62,682.17
Lehigh, No. 8,	Lehigh Coal and Navigation Company,	233	136	369	780	222	107,423.18
Lehigh, No. 10,	do. do.	200	179	379	960	240	116.259.10
Lehigh, No. 11,	do. do.	193	139	332	840	218	76,955.00
Palmer Vein,	Alliance Coal Company,	156	124	280	754	228	35,596.00
Kaska William,	do. do.	27	42	69			
Northdale,	do. do.	42	23	65	168	40	2 968.00
St. Clair,	Joseph Atkinson,	11	6	17	26	215	4 858.05
Sharp Mountain,	Thomas Wren,	7	3	10	10	288	1 265 10
Black Mine,	J. D. Curtz Crook,			88		44	5,628.00
West Lehigh,	Wood & Pearce,	33	27	60	120	200	12,000 00
Greenwood,	Raabe & Fey,	6	7	13	93	237	2 480.00
Middle Lehigh,	Middle Creek Coal Company,	183	153	336	2,961	230	146,432.01
East Lehigh,	Mitchel & Symonds,	7	15	22	140	235	8,461.02
Pinedale,	Louis Lorenz,	20	15	35		70	1 827.17
Reppher,	John F. Quinn,	9	8	17	107	261⅛	4,250.16

NUMBER EMPLOYEES, COAL MINED, DAYS WORKED, &c.—*Continued.*

COLLIERIES.	OPERATORS.	NUMBER OF EMPLOYEES.			Number of kegs of powder used.	Number of days worked by breaker	Number of tons of coal shipped.
		Inside.	Outside.	Total.			
W. C. Big Diamond,	James F. Donahoe,	19	10	29	200	230	5,860.00
Peach Orchard,	John Denning,	2	3	5	12	60	261.00
Monitor,	do.	7	5	12	240	208	2,840.00
Jugular,	Jacob S. Hepner,	2	2	4	19	269⅝	1,049 17
Woods,	George Woods, agent,	3	3	6	48	297½	887.02
Peach Orchard,	Thomas Burke,	.....	.....	1	.....	.....	9.00
W. C. Diamond,	E. Thomas,	.....	.....	1	.....	.....	362.13
Dundas,	Davis & Co.,	35	14	49	720	240	9,981.17
Black Valley,	Edward Hoskins,	5	3	8	7	238	1,666.17
Furnace,	John Wylam,	.....	.....	1	.....	65	50.00
Oak Hill,	Martin Devlin,	4	2	6	38	280	320.10
Kirkline,	P. O'Conner,	3	4	7	5	35	219.00
New Castle,	B. F. Palm & Son,	.....	2	2	.....	126	659.00
Cromdu,	George Morgan,	3	2	5	49	220	919.00
Crystal,	Joseph Brady,	15	5	20	200	204	5 149.11
Oakwood,	John Botham & Co.,	6	6	12	24	154	1,000.00
Morning Star,	Wyms & Morgan,	2	1	3	10	70	563.00
Black Heath,	George Kantner,	7	2	9	40	176	729.00
	John A. Lawrence,	.....	.....	10	.....	.....	1,842.18
Gate Vein,	George Wilson,	.....	.....	5	.....	12	31.00
	Daniel Larer,	.....	.....	3	.....	.....	411.00
Jonestown,	T. F. Quinn,	1	2	3	3	265	350.00
Consumed or sold at collieries,		3,894	2,589	6,632	35,591	*182½	1,612,526.16
Total production,							96,753.16
							1,709,280.12

*Average.

COMPARATIVE STATEMENT OF CASUALTIES, TONNAGE, AND EMPLOYEES, FOR THREE YEARS, IN FIRST OR POTTSVILLE DIVISION OF MINING DISTRICT OF SCHUYLKILL.

Years.	Killed.	Injured.	Total.	Total number of employés.	Number employés to each casualty.	Total number tons of coal mined.	Number tons of coal mined to each fatal casualty.	Number tons of coal mined to each non-fatal casualty.	Ratio of tons of coal mined to casualties.	Number tons of coal to each employé.
1880, ...	15	129	144	6,913	$53\frac{1}{2}$	1,461,070.17	97,404.14	11,326.02	10,146.06	211.07
1881, ...	18	173	191	6,497	$34\frac{3}{191}$	1,829,656.06	101,647.11	10,516.00	9,579.06	281.10
1882, ...	20	91	111	6,632	$59\frac{83}{111}$	1,709,280.12	85,464.00	18,783.00	15,398.01	257.00
Total, ...	53	393	446	. . . . .	. . . . .	5,000,007.15				
Average, ...	$17\frac{2}{3}$	131	$148\frac{2}{3}$	$6,680\frac{2}{3}$	$49\frac{1}{4}$	1,666,669.05	94,838.08	13,541.07	11,707.07	247.05

NAMES OF COLLIERIES IN OPERATION AND COAL MINED IN THE POTTSVILLE DIVISION OF SCHUYLKILL DISTRICT FOR THE YEARS 1880-81-82.

Names of the Collieries.	Location of Collieries.	Names of Operators.	1880.	1881.	1882.
Beechwood,	Mt. Laffee,	Philadelphia and Reading Coal and Iron Company,	45,078 05	39,706.17	31,920.09
Colket,	Donaldson,	do. do.	25 481 08	43 221.15	31 484.08
East Franklin,	Upper Rausch Creek,	do. do.	34,418.18	19,179.07	25,051.19
Eagle Hill,	New Philadelphia,	do. do.	56,427.16	70,084.12	69,811.10
Forestville,	Forestville,	do. do.	. . .	. . .	11,443 00
Glendower,	Glen Carbon,	do. do.	25,738 19	51,465.18	1,220 12
Mine Hill Gap,	Minersville,	do. do.	35,028.18	48 902.09	51,540.09
Middle Creek,	Middle Creek,	do. do.	. .	. .	4 872.00
Otto,	Branchdale,	do. do.	35,639.09	55,905.05	11,422 09
Phœnix Park, No. 2,	Phœnix Park,	do. do.	24,468.11	33,011.00	32 963 18
Phœnix Park, No. 3,	Phœnix Park,	do. do.	18,771.01	22,163.01	30,676.03
Pine Forest,	St. Clair,	do. do.	33,050.11	41 549 12	32,468.02
Pottsville Shaft,	Pottsville,	do. do.	39,062.10	16,478 08	42,625.19
Richardson,	Glen Carbon,	do. do.	70,773.14	58,388.16	66 381.00
Thomaston,	Heckscherville,	do. do.	77,186.03	82 975.19	70,784.06
Swatara,	Swatara,	do. do.	21 463 18	53,124 04	41,725 05
Wadesville Shaft,	Wadesville,	do. do.	106 388.00	110,874 08	15,233 04
Black Heath,	Minersville,	William H. Harris,	26,883.09	21,132 02	6,245.03
Chandler Tract,	Minersville,	Patrick Keenan,	426 05	100.00	
Ellsworth,	New Castle,	John R. Davis,	10,126.13	11 933 02	15,036.00
Eagle,	St. Clair,	George W. Johns & Brother,	41,466.14	49,361.19	28,594.07
Jugular,	New Castle,	Jacob S. Hepner,	895.07	869.04	1,049.17
Gate Vein,	Pottsville,	Gate Vein Coal Company,	395.17	. .	31 00
Kalmia,	Orwin,	Phillips & Shaeffer,	76,026 16	83 167 00	200,100.05
Lincoln,	Tremont township,	Levi Miller & Co.,	125 170.08	146 899.17	165 678.07
Lower Rausch Creek,	Tremont township,	Miller, Graeff & Co.,	82,608.19	85 382.03	62,682.17
Louis Tract,	Minersville,	Seth W. Greer,	773 07	207.18	
Lehigh, No. 8,	Coal Dale,	Lehigh Coal and Navigation Company,	96,145.12	140 365 11	107,423.18
Lehigh, No. 10,	Coal Dale,	Lehigh Coal and Navigation Company,	91,509.01	86 463.04	116,259.10
Lehigh, No. 11,	Coal Dale,	Lehigh Coal and Navigation Company,	40,806.05	81,525.10	76,955 00
Palmer Vein,	New Philadelphia,	Alliance Coal Company,	23 772.00	28 000 00	35 596 00
St. Clair,	St. Clair,	Joseph Atkinson,	2,253.13	3.524 17	4,853.65
Sharp Mountain,	Pottsville,	Thomas Wren,	3,913.15	2 540.00	1,265.10
W. C. Diamond,	Minersville,	E. Thomas,	5,060.11	5,058 18	362.13
Swatara,	Swatara,	John D. Felty,	719.00	1,046 05	
Chandler Tract,	Minersville,	William Lloyd,	60.00	9.10	
Monitor,	Wadesville,	John H. Denning,	2,585.04	1 854.07	2,840.00
Peach Orchard,	St. Clair,	John H. Denning,	1,743.15	1,362.07	261.00
St. Clair,	St. Clair,	Thomas Burke,	294.13	235.00	9.00
Greenwood,	Tamaqua,	Raabe & Fey,	1 306.06	2 776.00	2,480.00
West Lehigh,	Tamaqua,	Wood & Pearce,	14,357.10	16 500 00	12 000.00
Black Mine,	Llewellyn,	J. D. Curtz Crook,	1,259.15	16,357.04	5 628.00
Tremont Lands,	Tremont,	Peter Laux,	402.15	131.05	
Furnace,		John Wylam,	239 00	120.00	50.00
		Theodore Hellman,	323.00	637.11	

Black Valley,	Minersville,	Edward Hoskins,	1,710.03	1 942.16	1,666.17
W. C. Big Diamond,	Wolf Creek,	James F. Donahue,	5.005.01	8.000.00	5,860.00
New Boston,	New Boston,	Middle Creek Coal Company,	47,601.00	153 924.11	146,432 01
Hiawatha,	Middleport,	S. Kestenbock,	150.00		
Middleport,	Middleport,	Louis Lorenz,	3,000.00	6 600 00	1,827.17
East Lehigh,	Mahanoy,	Mitchel & Symonds,	5,677.17	10,116 08	8,461 02
		Stephens & Bossler,	150.00		
Repplier,	New Castle,	J. F. Quinn,	.....	3,106.18	4 250.16
Mammoth,	Broad Mountain,	Mahaney & Co.,	.....	750 00	
Woods,	Swatara,	George S. Woods,	.....	1,054 12	887.02
Garfield,		Tim Coekhill,	.....	252 04	
Klein & Repp,		Samuel B. Myers,	.....	165.00	
W. C. Diamond,		John W. Davis,	.....	566.18	
Dundas, No. 7,		Davis & Co.,	.....	5,000.00	9,981.17
Northdale,		John B. Church,	.....	.....	2,968.00
Jonestown,		T. F. Quinn,	.....	.....	350.00
Oak Hill,		Martin Devlin,	.....	.....	320.10
Kirkline,		P. O'Conner,	.....	.....	219.00
New Castle,		B. F. Palm & Son,	.....	.....	659.00
Croindu,		George Morgan,	.....	.....	919.00
Crystal,		Joseph Brady,	.....	.....	5.149.11
Oakwood,		John Botham & Co.,	.....	.....	1,000.00
Morning Star,		Whyms & Morgan,	.....	.....	560.00
Black Heath,		George Kantner,	.....	.....	729.00
		John A. Lawrence,	.....	.....	1,842.18
		Daniel Larer,	.....	.....	411.00
Total,			1,367 531.06	1,726 089.12	1,612 526.16
Sold or consumed at collieries,			93 549.11	103,566.14	96,753 16
Total production,			1,461,070.17	1,829,656.06	1,709,280.12

SECOND DISTRICT.

OFFICE OF INSPECTOR OF MINES,
SHENANDOAH, SCHUYLKILL COUNTY, *March 17, 1883.*

To His Excellency, ROBERT E. PATTISON,
Governor of Pennsylvania:

SIR: In compliance with section twenty-two of an act of Assembly, approved March 3, 1870, known as the mine ventilation act, I have the honor to submit the following annual report, as Inspector of Mines for the second or Shenandoah Division of the Mining District of Schuylkill, for the year 1882.

The accidents in and about the mines of the district, together with the statistics of the production, number of employés, time worked at the several collieries, quantity of powder used, &c., have been tabulated. The improvements made during the year at the different collieries are reported.

The fatal accidents that have occurred are described in detail, and suggestions are made that if heeded may lead to the prevention of similar accidents in the future.

These detailed descriptions, to the casual reader, may seem unnecessary, but I am satisfied from experience, that information as to *how* accidents are likely to occur, is best conveyed by minute descriptions of *how* they have occurred. I am also of the opinion, that if these descriptions of mining accidents were printed in pamphlet form and circulated among the mining population, they would exert a beneficial influence.

The production of the District in 1882 was one hundred and fifty-six thousand four hundred tons more than in 1881, and there were six more fatal accidents. The number of tons mined for each life lost in 1882, was one hundred and sixteen thousand five hundred and twenty-five and two tenths tons. In 1881 the production per life lost was one hundred and thirty-two thousand four hundred and eighty-eight and one tenth tons. This increase in the ratio of deaths to the production, is due to the explosion of gas at the Kohinoor Colliery in May, by which five lives were lost, and to the fact that every year the difficulties and dangers attending mining are increasing.

As the coal trade expands, a larger per centage of unskilled labor is being employed in mining, making it impossible under the present law to maintain that standard of discipline the greater dangers and difficulties render necessary.

Of the forty fatal accidents which occurred in the district, thirty-five happened underground. Of these fifteen, or thirty-seven and one half per cent., were due to falls, six, or fifteen per cent., to cars, seven, or seventeen and one half per cent., to gas, two, or five per cent., to shots and powder, three, or seven and one half per cent., occurred on slopes, and two, or five per cent., were due to miscellaneous causes.

Of the five fatal accidents which occurred on the surface, two, or five per cent., were due to cars and dumpers, two, or five per cent., occurred on planes, and one, or two and one half per cent., were due to machinery.

Comparison of these figures with those of the previous year, will show that the ratio of deaths from falls is reduced from forty-six to thirty-seven and one half per cent.; from cars, from twenty-nine to twenty per cent., and from shots and powder from eight to five per cent. The ratio which the accidents from gas (by explosion and suffocation) bear to the whole, has been doubled, having increased from eight per cent. in 1881 to seventeen and one half per cent. in 1882, showing that the quantity of gas to contend with has increased, or the care in handling it has decreased. I think that this increased ratio is due to the fact that some of the collieries are now tapping gas in dangerous quantities from near the bottom of the basins, in the Mammoth seam, and the only way in which we can reduce the ratio of deaths to production is by a more rigid discipline, and more liberal application of the advanced systems of mining.

Very respectfully,

ROBERT MAUCHLINE,

Inspector of Mines.

Fatal Accidents from Falls.

No. 1.—January 10. Daniel Malloy, aged 25, single, a miner employed at the Wm. Penn Colliery of the Wm. Penn Coal Company.

Daniel Malloy was fatally injured by a piece of coal falling on him in a breast in the water-level gangway of the Mammoth seam, which is at this point very flat and rather soft. The breasts are driven narrow and high and so much coal is taken out that the top cannot be minutely examined or properly secured. An examination of the breast showed that it was in average condition, but that it would require the most careful inspection by a person standing on the bottom to detect a loose piece as small as that which fell on Malloy. The piece fell from the "Leather Bench." It fractured his skull and caused his death two days after the accident.

No. 2.—March 2. Michael Brennan, aged 35, wife and three children, a miner employed at the Indian Ridge Colliery of the Philadelphia and Reading Coal and Iron Company.

Michael Brennan was one of three contractors who were removing pillars in the old workings of the Mammoth Seam, between the Indian Ridge and Plank Ridge Shafts. They were skipping a corner so as to get the sheet-iron closer to the rib, and thereby save shoveling. A wing of the five feet bench hung over the face, opposite the chute. Brennan had ex-

amined it and pronounced it safe; his partner commenced drilling in the bottom to blast the whole corner off, while Brennan was putting down the coal. While stooping at his work the piece of coal fell and killed him instantly.

When I inspected the place it appeared safer than any included in the contract. No slips were visible; but the "bind" of the top caused by the weakening of the pillars, added to its own weight, in my opinion caused the piece to break off without warning. Accidents of this kind are difficult to prevent. Pillars in such places are mined at a risk or left and lost. To decrease the ratio of accidents occurring under such circumstances will require a degree of caution far beyond what is generally practiced in mining coal.

No. 3.—Martin Joyce, aged fifty-one, single, a miner employed at the Schuylkill Colliery of the Philadelphia and Reading Coal and Iron Company.

The Buck Mountain seam here is nearly horizontal and very hard, and the wagons are loaded at the face. Joyce's breast was worked up as far as required, and he was put at mining out a part of the pillar opposite the top of the next breast, which was not driven up so far. After firing some shots in the lower benches, a piece about fourteen feet long and three feet wide of the fourteen inch bench, next to top, was left hanging on the side. Joyce sounded it, and, being satisfied as to its safety, commenced shoveling coal over to the side of the track, when it fell and killed him. Joyce should have blasted or wedged the piece of coal down, or kept from under it. This accident was due to want of caution.

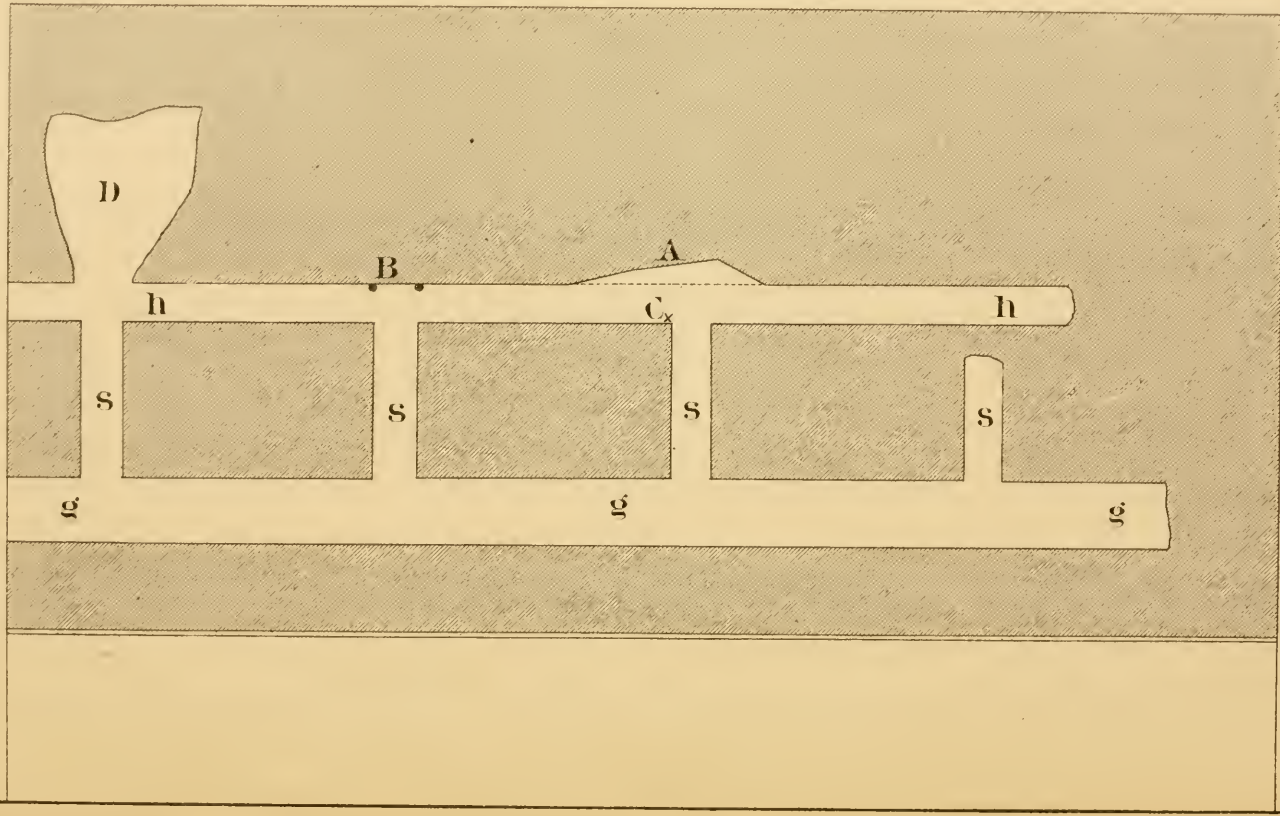
No. 4.—April 10. James Cuff, aged thirty-five, wife and five children, a miner employed at Packer No. 4 Colliery of the Lehigh Valley Coal Company.

On examining the place where this accident occurred I found that it was a new breast on the Mammoth seam, the face of which was only twenty-four feet above the battery, and twenty-two feet wide. The breast was worked full, and the coal was taken eight feet high to the smooth on top of the three foot bench. The eight feet of coal mined are in two benches, the bottom one being the "blasting bench." Cuff had six feet of the top bench hanging. A diagonal slip, running from near the middle towards the side, attracted his attention, and suspecting danger he sounded it and told his partner that it was all right. His partner resumed drilling at the face while Cuff proceeded to dress off the manway when the bench, from the slip named, to another near the rib, fell and killed him, leaving the other part of the bench still hanging over his partner who was drilling. The two slips ran toward each other at an angle, making the block which fell narrower at the back than at the face; they also slanted toward each other at the top, giving it a dovetail shape with the narrow side up, so that the least jar might cause it to fall.

In examining such large blocks by sounding the most experienced miners are apt to be deceived. When examining such pieces, the direction of the

Diagram No. 1, Illustrating place in Cuyler Colliery, where Patrick Tigue was killed.

A.—Place where Coal fell from.
B.—Timber nearest face.
C.—Place where P. Tigue was killed.
D.—New Breast opened.
h.—Heading.
S.—Schules. g.—Gangway.



slips should be noticed, so as to determine whether the blocks are locked or unlocked, as many accidents are directly traceable to slips of this character.

No. 5.—May 1st. Michael Boyle, aged forty-five, wife and four children, a miner employed at the Kohinoor colliery of R. Heckscher & Co.

The mammoth seam here is about forty feet thick. The angle of dip is such as to prevent either the wagons from being taken up to the face or the coal pushed down the breasts on sheet-iron. The lifts are short; the gangways are driven in the middle benches of the seam and the breasts are worked level until the road meets the bottom rock, where a platform is constructed. The breast is then driven at a sufficient angle to permit the loose coal to slide down the breast on sheet iron. This is termed jumping the benches. By this method the upper part of the seam is taken and the coal under the sheet-iron is afterwards removed with buggies.

When the bottom coal is being taken up and loaded into the buggies the miners who perform this work are in the center of a space forty feet high and thirty to forty-five feet wide, with no means of inspecting or securing either top or sides. The circumstances attending this accident went to prove that as Boyle was near the track, a piece of coal from the side, near the top, in advance of where he stood, bounded over the bottom coal and struck him in such a manner as to cause his death. His partner was unable to point out the piece of coal which struck him or the place from whence it fell.

I remarked on the danger of this and similar systems of mining in my last report, and I cannot help wondering how men can be found working in such a high, wide and dangerous place as this without any thought or sense of insecurity.

No. 6.—May 5. Patrick Tigue, aged twenty-one, single, a laborer employed at the Cuyler colliery of S. M. Heaton & Co.

Patrick Tigue, with his father, were working as laborers, for a miner, Paul Quick, whose contract was to drive chutes and headings and secure them with timber where necessary. The Buck Mountain seam, at the point where this accident occurred, dips at an angle of thirty-five degrees; is strong and hard, with occasional slips; while the character of the top and its general condition are good. The miner was working at the face of the heading while Tigue shoveled the coal back and put it down the last open chute to the mine car. Sixty feet back from the face the last timber had been stood. The heading driven parallel with the gangway and at right angles to the dip formed an irregularly shaped square, with its lower sides or floor at an angle of thirty-five degrees, and its upper side at an angle of of fifty-five degrees.

On the morning of the accident, the upper side, at the point over the last chute, had been examined by both the boss and contractor and their joint opinion was that it was safe and needed no timber. Immediately after dinner a piece ten feet long, two feet wide in center, one and a half feet thick, slid out from this place, jammed Patrick Tigue, and killed him.

This accident demonstrates how little dependence can be placed in an examination, even when made in a five by five feet heading by a purely practical boss. He was unable to say why his attention had been directed to this particular place; nevertheless he swore that it sounded safe at the time he examined it. The miners' opinion could be more easily accounted for, it being molded by self-interest, as timber where necessary was included in his contract. This case led to a suit before a justice of the peace, but as the parties promised to comply with the law in the future it was not taken to court. In diagram No. 1 this accident is illustrated.

No. 7.—May 17. Thomas Healy, aged thirty-six, wife and two children, a miner employed at the Glendon colliery of J. C. Hayden & Co.

The Buck Mountain seam, at the point where this accident occurred, dips at an angle of twenty-eight degrees, and is worked by "jugglers" and sheet iron on each rib. Healy's breast was finished and he had commenced skipping the pillars from the top. While dressing with the pick, a broad piece of slate, six inches thick, fell, slid over the loose coal, struck and killed him. Propping would have prevented this accident.

No. 8.—July 8. Patrick Lyons, aged 32, wife and two children, a miner employed at Packer No. 3 Colliery of the Lehigh Valley Coal Company.

This accident occurred in the Mammoth seam, which at this point dips at an angle of twenty degrees, and is worked by twin breasts, from which panels are opened and the coal buggied to the chute.

Lyons and Rowley, his partner had finished their breast and were ordered to load the loose coal and then take a new place. While waiting they fired shots under some wings with the intention of getting more coal with little labor and expense. This caused the top to work, and a small piece of coal fell and struck Lyons on the head, breaking his skull and causing his death before he could be taken to the surface.

I was in the colliery at the time. I examined the place shortly after the occurrence and found it working, and small pieces falling. An inspection of the pillar proved that the men had violated orders in firing the shots, and therefore were responsible for the accident.

No. 9.—September 21. James Engle, aged thirty-seven, single, a laborer employed at the West Lehigh Colliery of Fisher Hazard, Esq.

James Engle was working with his brother in a gangway. A brattice prop stood near the face under a large piece of apparently loose slate, in which the brother was drilling a hole to blast down. Engle took a sledge and struck the prop to knock it out, his intention, it is supposed, being to assist the shot. His brother, seeing the danger, called to him to desist. He, however, struck another blow, but hit the wedge instead of the prop and knocked it out, which caused the slate to fall and kill him, while his brother had a narrow escape. This accident was the result of either inexperience or recklessness.

No. 10.—September 21. Thomas Jenkins, aged 36, wife, no children, a miner employed at the North Mahanoy Colliery of the Philadelphia and Reading Coal and Iron Company.

Thomas Jenkins was skipping pillars in the Seven-Foot seam, which dips here at an angle of about twenty degrees. Noticing a piece of dangerous slate over the sheet-iron he took his drill to remove it. As he came near it fell on the end of the drill, causing the opposite end of the drill to strike him. It inflicted severe internal injuries, from the effects of which he died four days afterwards. Jenkins, in removing the source of danger, took a wrong position.

No. 11.—October 7. Thomas Hopkins, aged thirty-two, widower, two children, a miner employed at the Turkey Run Colliery of the Philadelphia and Reading Coal and Iron Company.

The Mammoth seam in this section of the colliery is too soft to work on the usual plan, and timbered wagon roads or chutes were driven through it, and the coal was then robbed backwards. Hopkins was engaged in robbing at the time of the accident. He, in company with a laborer, was loading a car, the front end of which was inside beyond the last collar. A large mass of coal from the side of the pillar fell against the inside end of the car, and swung the other end of the car off the track, against the timber. Hopkins, who was retreating from the falling coal, was caught between the car and timber leg and crushed to death. I inspected the place the same day, and found it properly timbered, and that it was being worked on the only practicable plan under the circumstances.

No. 12.—October 25. Joseph Brill, aged forty, widower, four children, a miner employed at the Kohinoor Colliery of R. Hecksher & Co.

On examination I found this to be another of those wide, dangerous places, with the top thirty feet high, and weakened pillars the only means of support. The miners were engaged in loading out a fall, gotten by blasting from the pillar. While thus engaged, a piece weighing about ten tons fell from the pillar, over the loose heap, knocked the car from the track, rolled on Brill and killed him instantly.

This accident belongs to the same class as No. 5, and the same suggestions are applicable to both. Where these conditions exist falls of coal must either be left or loaded at great risk. Experience, an acute sense of hearing, and great caution are qualities absolutely necessary for a miner in such situations.

No. 13.—November 24. Frank Blew, aged 16, at the Coplay Colliery of L. F. Lentz.

Frank Blew was not employed at the colliery, but went into the mine to keep his brother company, as his brother's partner was absent. While crawling up the chute he pulled out a lagging, causing the coal from above the chute to fall over and cover him. Life was extinct before the coal could be removed and the body recovered.

I inspected this place and could not see where any person with experience was likely to meet with such an accident, unless through gross carelessness. This accident may be attributed to loose discipline in allowing inexperienced persons to enter the mines.

No. 14.—December 6. James Tahany, aged twenty-two, single, a miner employed at the Coal Run Colliery of the Suffolk Coal Company.

The Orchard Seam, where this accident occurred, is from eight to ten feet thick, lies at an angle of twenty-eight degrees, and is in three benches. The top bench is thin and is left up to support the slate. The breasts are worked narrow with sheet iron in the center, and the top is secured with props. The distance the bottom bench can be mined from under the middle bench must be determined by the nature of the coal, the presence or absence of slips, etc. In this case about eight feet of the middle bench was undermined, and Tahany's brother was drilling a "squaring" hole preparatory to taking down the top coal. A large piece, twelve feet long, three and a half feet wide, and three feet long, fell out between two slips and killed James Tahany as he was stooping over the sheet-iron and putting down coal.

This accident is of the same character as No. 4. Both were caused by "dovetail" slips, and as many casualties may be traced to the same cause. I have illustrated it in diagram No. 2.

No. 15—December 30. Conrad Selbach, aged forty-four, wife and seven children, a miner employed at the Shenandoah City Colliery of the Philadelphia and Reading Coal and Iron Company.

Conrad Selbach was killed while robbing back the stumps of a slant gangway on the bottom split of the Mammoth seam by a fall from the upper side. He had the coal skipped ten feet back from the upper legs of the gangway timber. The front end of the car was inside the last collar. He was standing between the timber and the coal face, when a piece of coal fell from the upper bench and struck him, inflicting severe injuries from the effects of which he died shortly after reaching his home.

This place appeared very secure considering the circumstances. The pressure of the roof, which was increased by removing the pillars, kept the coal cracking and chipping; nevertheless, the top was in fair condition, and miners would regard it as safe as the average working place.

Fatal Accidents from Cars.

No. 1.—February 22. Patrick Devanny, aged forty, wife and five children, a miner employed at Connor colliery of the Philadelphia and Reading Coal and Iron Company.

Patrick Devanny, his brother, and another man by the name of McCully, were working together. They received two cars at a time. When both were loaded Devanny and McCully ran the first car down the grade and followed it to take out the sprags. On this occasion neglecting to block the car behind, it followed the first car, and being without sprags, it gained speed and ran over Devanny. McCully noticed the rear car coming in time to save his life.

This accident was the result of gross carelessness on the part of the two men, whose duty it was to attend to the spragging and running of the cars.

Fig. 1.

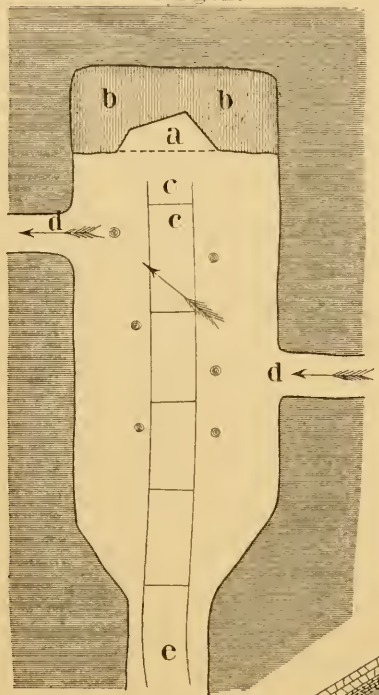


Fig. 2.

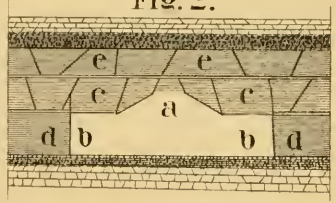


Fig. 3.

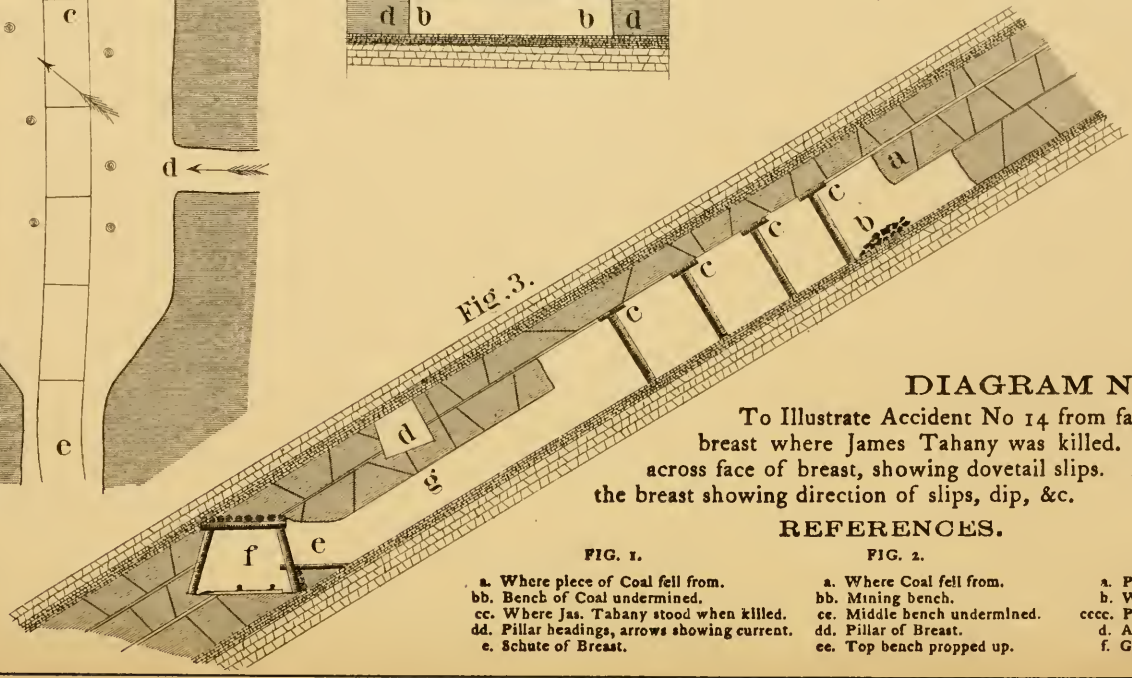


DIAGRAM NO. 2.

To Illustrate Accident No 14 from falls, Fig. 1 is plan of breast where James Tahany was killed. Fig. 2 is a section across face of breast, showing dovetail slips. Fig. 3 is a profile of the breast showing direction of slips, dip, &c.

REFERENCES.

FIG. 1.

a. Where piece of Coal fell from.
bb. Bench of Coal undermined.
cc. Where Jas. Tahany stood when killed.
dd. Pillar headings, arrows showing current.
e. Schute of Breast.

FIG. 2.

a. Where Coal fell from.
bb. Mining bench.
ce. Middle bench undermined.
dd. Pillar of Breast.
ee. Top bench propped up.

FIG. 3.

a. Piece of Coal which fell.
b. Where Tahany was killed.
cccc. Props in Breast.
d. Airway. e. Platform.
f. Gangway g. Schute.

DIAGRAM NO. 3.

Showing place in Turkey Run Colliery where Patrick Campbell was killed.

REFERENCES.

FIG. 1.

a. Place where Campbell's arm was crushed.
b. Tye of track with two joints.
c. Down grade on to main Gangway.

FIG. 2.

a. Where car nearly touched the top.
bb. Main gangway going inside.
c. Branch into breast.

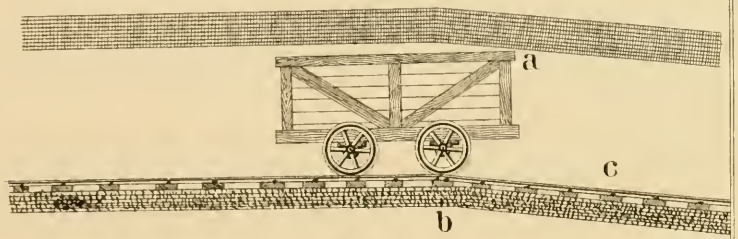


Fig. 1.

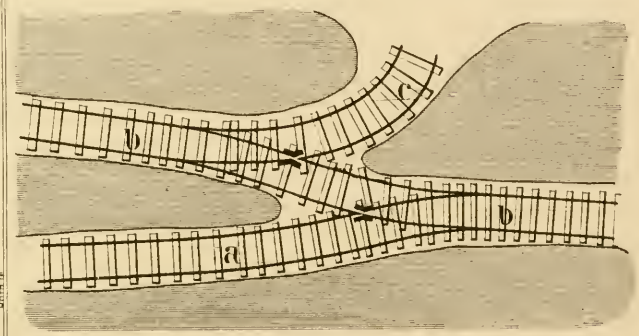


Fig. 2.

No. 2.—March 1. Patrick Campbell, aged twenty-six, wife and two children, a driver employed at the Turkey Run colliery of the Philadelphia and Reading Coal and Iron Company.

The facts in this case entitle it to more than passing notice, it being the result of bad management and false economy. At the place the accident occurred the coal is strong and hard. A gangway was driven in the bottom of the seam from which the breasts were worked, while another, farther back, was driven in sections and used as the airway. One of these sections was converted into a turnout by being connected at the inside end with the main gangway and was used as the empty track. This section of back gangway, at the end where the connection was made, was higher than the main gangway and very small. To have made a proper connection the bottom and sides would have required blasting until the back gangway was the same size and level as the main gangway. The coal was hard, and no timber would have been required, so that the coal thus blasted would have almost paid the expense. The boss, however, instead of shaping the place to suit the road, shaped the road to suit the place. The repairsmen were compelled to cut a rail to get two joints on one tie, and adapt the track to the abrupt change of grade to prevent the cars from running on three wheels and jumping the track. The top at places had to be dressed off with a pick to allow the cars to pass. This subjected the driver to disadvantages. He could not ride on the bumper supporting himself by holding fast to the top of the car, for want of space between the car and the top; nor could he walk alongside the car for want of space between it and the side. On the track he was in danger of a kicking mule, or of being run over in case he stumbled. He could only drive safely by getting inside of the car or running ahead of the team. Every practical man knows the danger and trouble attending the latter plan. A driver had quit and Patrick Campbell accepted the position. While he was riding in on the bumper, with his arm over the front of the car, it was crushed between the car and the top. The limb was amputated, but death resulted five days afterwards.

I examined the place and never saw a more dangerous trap for a driver on the main avenue of a mine. The sooner such management is abolished the sooner will security to life and profit to capital be increased.

When I complained to the boss he attributed the fault to the men who laid the track. I was well aware, however, that the latter not only knew but informed the boss how it should be done at the time the order was given. The regular driver left and a stranger was put in his place and was killed; while a wife and two children were made widow and orphans.

After the accident the rails were taken out and the place abandoned, and the expense of the turnout lost to the company.

This is but one of the many instances of the poor management of ignorant or careless bosses, the majority of which fail to come to the surface

until fatal accidents occur from them. Diagram No. 3 illustrates this accident.

No. 3.—May 23. George Snyder, aged thirteen, a door-tender employed at the Knickerbocker colliery of the Philadelphia and Reading Coal and Iron Company.

The door Snyder attended was near the gangway face. As the men working inside of this door had received all their cars for the day, Snyder went to go home. While on his way he attempted to jump on a moving trip of cars, fell under them and was injured so that he died on reaching the surface. He was employed the day previous, was inexperienced, and lost his life through violating standing orders against boarding cars while in motion.

Testimony at the inquest proved that the boy had been properly instructed and carefully attended to when he was placed at his position at the door the day previous.

No. 4.—Thomas Else, aged sixteen years, single, a laborer employed at Packer No 2 colliery of the Lehigh Valley Coal Company.

Thomas Else acted as conductor with the small locomotive engine used on the dirt bank. The telephone company's wires, which connect with the colliery, pass from a pole across the dirt bank track into the office, at a heighth at one side lower than a person's head when sitting on the top of a loaded dumper. Else, while in getting on the top of a dumper to ride on it, was caught by the wires and thrown under the engine and killed. As Else was supposed to ride on the engine and not on the dumpers the coroner's jury rendered the usual verdict of "accidental death."

No. 5.—August 1. John Tempest, aged sixteen, an oiler outside, employed at the West Shenandoah colliery of the Philadelphia and Reading Coal and Iron Company.

The loaded cars are run in pairs from the slope to the coal plane. Tempest got on the bumpers between the cars to ride. On reaching the plane the cars gained such speed that the front one ran partly up the incline, which caused the top of the cars to come together. Tempest was squeezed between them and fatally injured. His death occurred two days afterwards.

This is another instance of loose discipline in permitting persons to ride on the cars.

No. 6.—October 26. John Sylinski, aged twenty-five, wife and one child, an outside laborer, employed at the Elmwood colliery of the Philadelphia and Reading Coal and Iron Company.

John Sylinski was engaged at putting a drain under the railroad track near the breaker. While stooping Eastus Reed, the shipper and clerk, started some railroad cars from under the breaker. The noise prevented Sylinski from hearing the cars, and he was run over and received fatal injuries, from which he died on the evening of the same day.

This is another example of how carelessly business is conducted at some

Fig. 1.

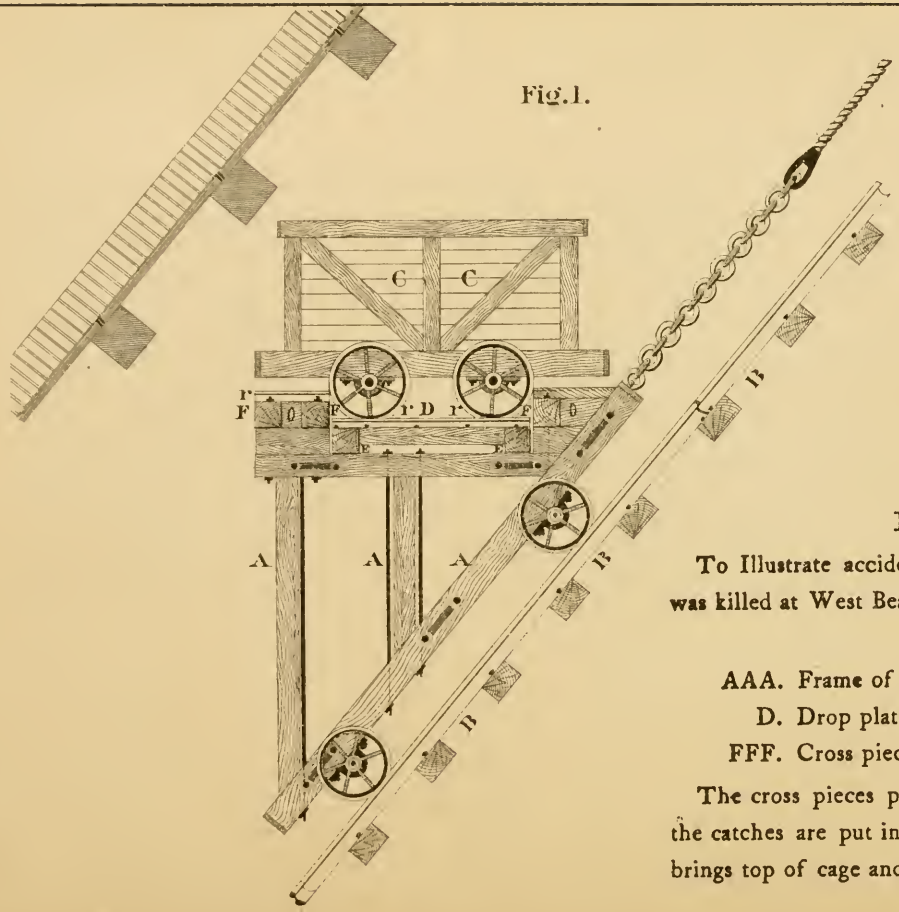


DIAGRAM NO. 4.

To Illustrate accident on Slopes No. 1. Showing how John Cotter was killed at West Bear Ridge Colliery.

REFERENCES.

AAA. Frame of cage. BBB. Slope track. CC. Car.
D. Drop platform. r. Rails of cage and drop.
FFF. Cross pieces of cage. EE. Cross pieces of drop.

The cross pieces project 4 inches over the sides of the cage, when the catches are put in, they catch the drop, and the cage settling back, brings top of cage and drop flush, allowing car to be moved.

collieries. No arrangements were perfected or signals established to secure those working on the track from accident, yet all concerned in this case knew that the men were working on the track, and that the noise of the falling water and a steam pump close by prevented them from hearing cars moving under the breaker. This accident, therefore, must be attributed to gross carelessness.

No. 7.—November 20. Jonathan Kendrick, aged eighteen, single, a driver employed at the Girard colliery of the Philadelphia and Reading Coal and Iron Company.

Jonathan Kendrick was hauling a trip of empty cars from the turnout to the west-north dip gangway. A double switch at the end of the turnout was left misplaced, the boy in attendance having been sent on an errand. Kendrick's mules followed the main track while the cars ran on a branch. In attempting to unhitch the mules from the cars he fell and was run over and killed. Kendrick, who knew the switch-boy was absent, failed to notice the position of the switch-handle and prevent the accident.

No. 8.—December 23. Martin Maley, aged sixteen, a driver employed at the Plank Ridge colliery of the Philadelphia and Reading Coal and Iron Company.

Where this accident occurred the seven-foot seam is very thin, and only a few inches of space is left between the cars and the top. The cars are taken in singly, and there is plenty of space on the side for the driver to walk. Maley was standing on the front bumper with his back to the mule, and forgetting that he was riding into a low place, remained standing until he was crushed between the car and the top. He died before reaching the surface. If drivers were compelled to walk alongside their mules in such places, this accident would not have occurred.

Fatal Accidents from Slopes.

No. 1.—February 26. John Cotter, aged twenty-one, single, a driver employed at the West Bear Ridge colliery of Myers, McCreary & Co.

John Cotter was killed by being thrown off the cage while riding up the slope, which is at an angle of 45° or 50° degrees on the Mammoth seam; has a double track, and is about six hundred feet in depth. The cars are hoisted with a cage or triangular shaped carriage, whose frame is built at an angle to suit the slope, and on the top of which the car rests while being hoisted. The car is held in place by a "drop," an arrangement which allows that portion of the platform of the cage underneath the wheels of the car to sink into the cage a depth sufficient to keep the car from running off. This drop is a separate frame, a little longer than the wheel-base, upon which the car stands. It is constructed so that when the main frame of the cage rests on the catches, at the top or bottom, the drop frame is flush with the top of the cage, allowing the cars to be run off and on, but when the rope lifts the cage off the catches the drop frame, which is fitted inside the main frame, in guides, sinks down the required distance to cause the car to stand in the recess, and thus effectually block

it and prevent it from running off the cage or against the slope timber during its transmission up and down. From the testimony of witnesses, examined by the coroner's jury, I obtained the following facts as to the cause of this accident:

The pumps having been overpowered the mules were hoisted and mining suspended until such times as the weather should change and there would be less surface water to contend with, when the pumps would be able to clear the mine of water and allow operations to be resumed. On the Saturday evening before the accident water was still in the slope bottom. The superintendent ordered the mules to be lowered on Sunday, so as to be ready to resume operations on Monday morning. Cotter, along with several others, was engaged in that duty.

When the mules are to be lowered or hoisted up this slope a box or frame is placed on the cage, instead of a car, into which the mules are put. The drop frame of the cage is blocked up flush, so that when the cage is lifted from the catches it will not sink, and any injury to the mules by the movement of the frame be prevented. The necessary arrangement being completed, Cotter and others proceeded to lower the mules, until all had been taken down without accident. The cage was then hoisted for those on top to remove the mule-box and return it to hoist a car, which had been sent down with hay. They removed the mule-box, but neglected to remove the blocks underneath the drop. When the cage reached the bottom Cotter and the men who were with him ran the empty car on the cage, got on the car and signaled to be hoisted. When the cage lifted, the drop being blocked, there was nothing to keep the car in position, and when it had been hoisted one third the distance up the slope, to a point where the angle of dip increased a few degrees, the platform became slightly inclined, which caused the car to run back and catch the slope timber. This tilted up the car and threw Cotter off and down the slope. He was found in the cage-pit, unconscious and almost lifeless. He died on the way home without recovering consciousness.

The circumstances attending this case rendered it doubtful if a conviction under the present mine law could be obtained, and it was with reluctance passed over. Those on top were criminally negligent in not restoring the cage to its proper condition; while those below, although they had no reason to suspect or notice that the blocks under the drop were not removed, had no right to ride up the slope, even on an empty car. If the engine had not been running slowly this might have proved a much more serious accident, because when the car caught the collar it tipped up, causing Cotter to fall, and then fell back and caught under the next collar, which crushed it so that it went over the cage and down the slope in pieces. The other two men saved themselves by holding fast to the chains and then jumping off and catching the center legs. The engineer fortunately stopped his engine before the cage moved many feet more, which prevented further damage.

Fig. 2.

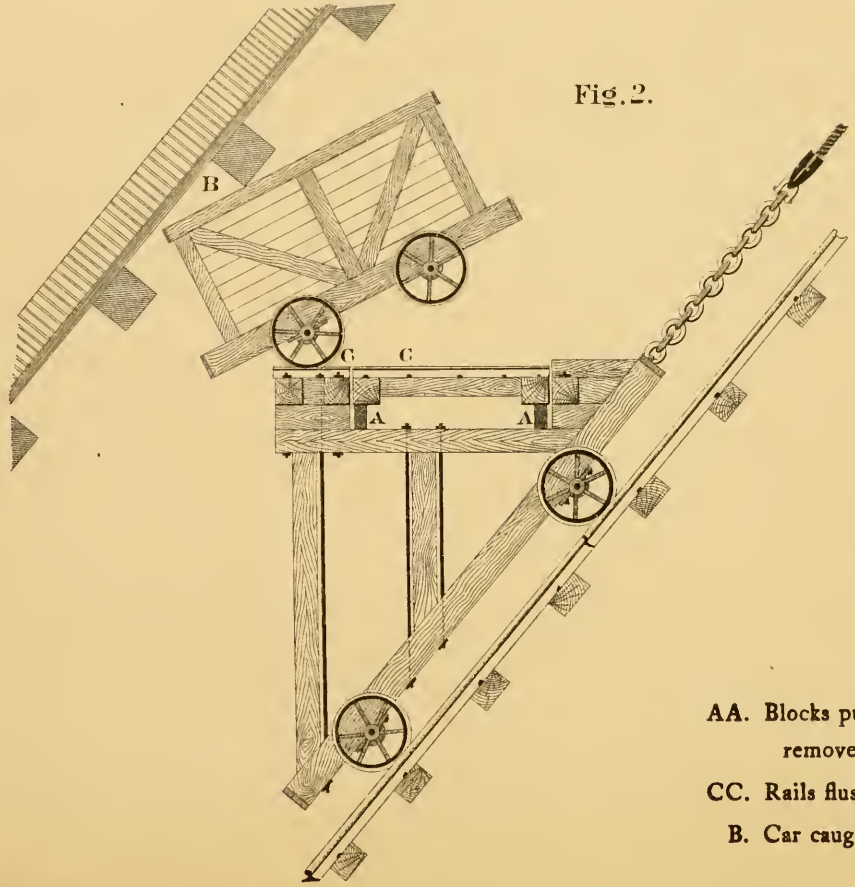


DIAGRAM NO. 5.

AA. Blocks put under drop when lowering mules and not being removed caused the accident.

CC. Rails flush, allowing car to run off.

B. Car caught on slope timber, which crushed it.

This accident is attributable to carelessness on the part of all who were handling the mules and attending to the cage. It is illustrated in diagrams Nos. 4 and 5.

No. 2.—March 14. John Monaghan, aged seventeen, and Frank Manning, aged fifteen, both employed at the bottom of the coal plane of the breaker at the Indian Ridge colliery of the Philadelphia and Reading Coal and Iron Company.

The former was killed and the latter fatally injured by a car breaking loose and running back down the plane. The boys were struck by the cars and flying pieces from the wreck.

The causes which led to this accident, as brought out at the coroner's inquest, were as follows:

The coal plane is used to elevate the coal on the top of the breaker. The angle of inclination is 30°. The car is attached to the chain by a single hook, and the cars are emptied by the door in the rear being opened while hanging on the incline. The coal runs out and down between the rails of the track. At the bottom the loaded cars are run in by gravity, while the empty cars, branching off at a higher level, run back to the shaft by the same force. The accident occurred when the collieries were working three days per week, all hands excepting the boss, engineer, and the force required to run the pumps, being suspended during the last three days of the week.

According to the testimony of the outside boss, he received orders on the Saturday preceding the accident to resocket the shaft rope with the assistance of the shaft engineer. The bridle chains of the cage are attached to the rope socket by clevises, the pins of which are fastened by clenching. For convenience in handling in resocketing, the rope was detached by cutting off the clenched heads of the clevis pins with a chisel. In driving one of the pins out with a punch it flew and fell down the shaft out of reach. After resocketing was finished, in attaching the cage, it was found that a pin to suit could not be found. The boss sent for the blacksmith to make a new one, but he was away from home, or at least did not keep himself in readiness to be called in a moment's notice. Not finding the blacksmith they searched around for another clevis, but could find none the proper length to equalize the chains and balance the cage; nor could the boss make a suitable or proper fitting one. They then went to the coal plane, and measuring one of the clevises of the hoisting rope there, they found it to be the required length, cut it off and put it on the shaft. To replace the clevis taken from the coal plane they took one from an old cage. The one they took off the plane had the pin clenched, but the one they replaced it with had the pin loose with a locking pin outside the jaw. The chain worked on Monday, but on Tuesday afternoon, as the car reached the top, it broke loose and ran back, struck the loaded car standing at the bottom, drove it on Monaghan and killed him, while some flying pieces struck Manning and fractured his skull, causing his death a week later. Another boy fortunately escaped with some slight bruises.

I asked the boss and his assistant whether they put the clevis from the old cage on by putting it through the link of the chain or by putting it through the bow of the socket, but they were unable to state which they did.

On examination I found that the clevis had not broken, but that the clevis-pin had slipped out. How it came out is of course a matter of opinion.

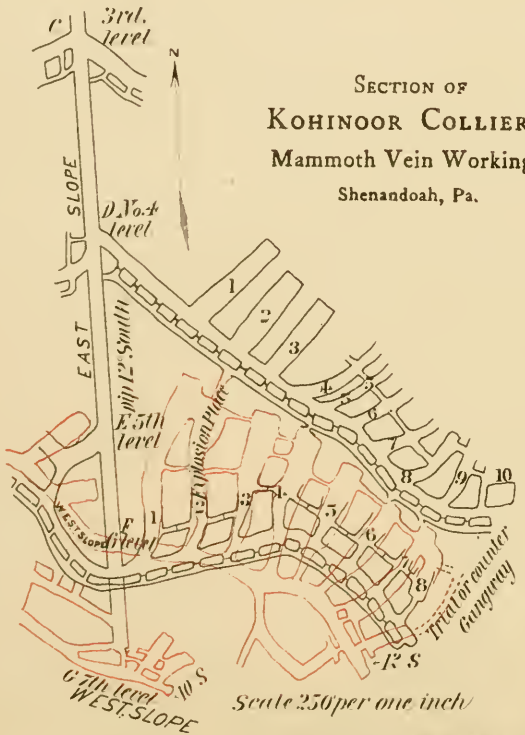
From attending circumstances I am of opinion that the accident was caused by the pin of the clevis not being clenched, because, First. If the pin had been through both jaws, even with the locking-pin broken out, the weight of the car would have prevented it from slipping out while the car was hanging on it. Second. If the pin had got out at the bottom while the rope was slack through the locking-pin breaking out, and if the clevis had then buckled through the bow of the socket, and caught sideways, it would have been strong enough to carry the load, but the jerk of the rope at the lift would have righted the clevis and disconnected the rope. Besides, the pin was found directly beneath where the car broke loose, down in the breaker, showing that the pin had been carried up with the chain. Third. The clevis was partly open, as if suddenly sprung wide.

The cause was probably as follows:

The locking-pin was a piece of quarter inch iron, put through and laid over by crossing the ends which were hammered down close and cut off with a chisel. The chain is thrown down some four feet from the empty to the loaded track, each hoisting. The heavy clevis striking on the rail might easily have broken out the locking-pin. Then as the chain fell in a heap the clevis-pin might have come out of one jaw, and being wedged or fastened in the other by the weight could have held the link. When the car reached the heavy grade, where it was emptied, the sudden and increased strain would cause the link to slip over the point of the pin by partly opening the clevis. The looseness of the pin in the jaw would allow the pin to assume a slanting position and aid the slipping out action of the link. A very short time expended by a blacksmith in properly fitting the clevis-pin would likely have prevented this accident; two lives and valuable property would have been saved, which were sacrificed because a half day was not expended at the proper time by a blacksmith.

No. 3.—April 6. Joseph A. Richards, age forty, wife and seven children, mining boss at Packer No. 1 colliery, of the Lehigh Valley Coal Company.

Joseph Richards was killed while riding up the slope. This slope is sunk at a very steep angle from the water level gangway of the Mammoth seam, and is about three hundred feet in depth. The cars are hoisted with cages. It was the custom of Mr. Richards to ride up in company with the repairman, every day at noon, to inspect slope, oil the rollers, and see that all was in proper condition. While thus engaged the men on top left a switch misplaced and an empty car in such a position that the driver in



SECTION OF

KOHINOOR COLLIERY,

Mammoth Vein Workings,

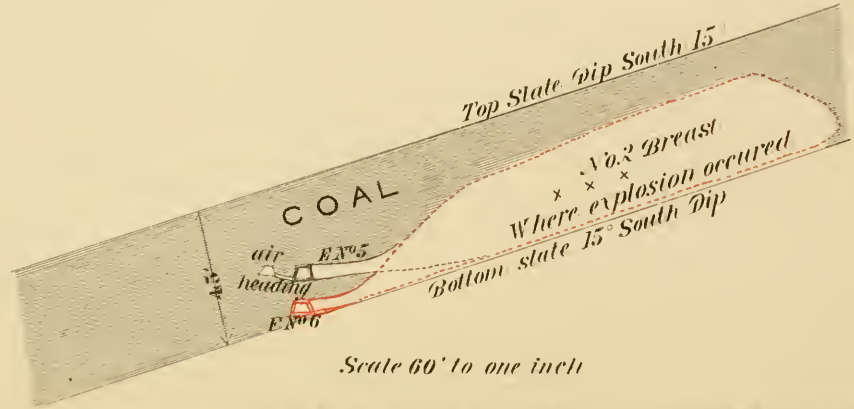
Shenandoah, Pa.

S. A. BEDDALL,

Shenandoah, Pa., Feb. 12, 1883.

I. J. Curtrate, accident from gas No 1.

Profile of Mulhall's Breast.



passing bumped the car down the slope. Both Mr. Richards and his assistant hearing the crash sprang off the cage, but a piece of timber struck the former and inflicted injuries from which he died when he was taken home. Cause of accident, loose discipline.

No. 4.—December 8. Daniel McAnally, aged twenty, single, a repairsman employed at the Lawrence colliery, Jacob Lawrence operator.

Daniel McAnally was fatally injured by falling down the slope. This slope is over one thousand feet deep on an angle of 50°; the coal is hoisted in a gunboat. Shortly before quitting time on the 8th of December the gunboat jumped the track about 150 feet from the bottom. The night repairsman, McAnally, and two others, were sent to put it on so as to be ready to hoist in the morning. McAnally was using a screw-jack to force the gunboat over on the track, and while turning the handle he allowed it to slip out of the hole in the shank of the jack, and stumbling, he lost his balance and fell to the bottom, receiving injuries which caused his death on the 11th, three days later.

A piece of canvass across the one track, immediately below the gunboat, would not have interfered with the air current and might have prevented this accident.

Fatal Accidents from Explosions.

No. 1.—May 24. Martin Mulhall, miner, aged fifty-five, widower, six children; James Mulhall, miner, aged twenty-four, single, son of the above; Owen Gallagher, miner, aged thirty-five, wife and three children; Samuel G. Hugo, driver, aged nineteen, single, and James McDonald, a door boy, aged thirteen, employed at the Kohinoor colliery of R. Heckscher & Co.

These persons were killed by an explosion of gas. On the day when this disaster occurred I was visiting West Lehigh colliery, where, upon reaching the surface, I was informed by telephone that forty men had been killed by an explosion of gas at the Kohinoor colliery. I rode directly to the mine.

Near the bottom of the inside slope I found a number of excited men searching over and under the heaps of fallen timber, broken cars, &c. I was told that all the bodies had been recovered except that of the elder Mulhall, in whose breast the explosion occurred.

Tracing the course of the explosion by its results, it appeared to have passed down the chute from Mulhall's place, wrecked the loaded car at his platform, knocked out the timber, and threw a quantity of debris against the lower side of the gangway, sufficient to cover several persons had they been under it. Passing outwards it blew down the door and timber on the turnout, filling it with a mixed heap of timber and loose coal. Inside of Mulhall's place I found no damage done by, or indication of, the explosion. A considerable force of men had been searching for over two hours, and every possible place had been examined. On examining Mulhall's breast I found a large quantity of coal lying several feet deep on the

sheet iron, as if it had fallen off the pillars. The place was squeezing, small pieces falling in every section of it, and had all the usual indications before or after a heavy fall. The upper part of the breast was empty Mulhall's hat and lamp being found on the sheet-iron above the fall, it was concluded the body must be under it, or have been blown into the gutter and covered by the debris piled against the lower side of the gangway.

Up to this time the search had been confined to turning over loose coal and fallen timber, looking under cars and other objects likely to hide a man's body.

I now requested that the fallen timber should be temporarily replaced or dragged out of the way, the track cleared, the heaps of coal loaded, and thus a systematic search be inaugurated. An organization was consequently effected, and the work progressed satisfactorily under the circumstances. The pillars were cracking and crazing, and falls were occurring at short intervals all over this section of the mine.

Alteration in the distribution of the air currents had to be made, owing to a very large accumulation of gas. After a great deal of labor the road was cleared as far as Mulhall's platform, from which the loading of breast coal was commenced, and the next day, about four o'clock in the afternoon, the body was found under the coal where the general aspect of the place suggested when first examined.

This accident caused considerable comment, and the coroner's jury carefully examined all witnesses who were likely to furnish any evidence in the matter, from whom the following facts were obtained :

The explosion occurred in a group of breasts worked from a gangway which was driven over the main slope some years ago. Another gangway, from the new slope at a lower level, was subsequently driven across for the purpose of taking out the coal under the first gangway, and was driven east until it reached what was supposed to be the bottom of the invert which separates the Kohinoor from the West Shenandoah collieries. The work being done was robbing and causing falls by thinning the pillars, with the exception of a counter chute intended to mine the triangular-shaped piece of coal between the invert and the next lift above. The night before the accident the breast next the counter fell heavily, closing the heading and cutting off ventilation from the upper end of the counter. To prevent the whole enclosed place filling with gas, down to the gangway, a stopping was taken out and the gas kept back to that point. The next morning the fire-boss got hand-fans and pipes, and, with proper assistance, commenced displacing the gas preparatory to the miners' driving a connection through the pillar to the gangway above, and establishing permanent ventilation. After getting the fan and pipes in position and before commencing to blow out the gas, the fire-boss supplied the men in the adjoining places with safety lamps as a precaution, although the gas had to return by the air-way over the chutes ; some, however, rather than use the lamps went home, the others staying and loading coal. The gas was nearly all out of the counter when the explosion occurred.

When the fire-boss examined the places in the morning he found Mulhall's place "working," with indications of a fall, and accordingly told Mulhall to go home. Busying himself in getting out the gas, he did not visit Mulhall's place to see if the order was obeyed. Although passing several times during the forenoon, the door at the entrance to the breast prevented him from seeing the lights.

The probability is that the elder Mulhall did not anticipate danger from gas as his place was so far from the counter, and considering himself competent to watch a squeezing place, ventured up the chute to discover, if possible, how much coal had fallen, when another fall occurred and drove the gas down on his light with the above result.

The following were probably the causes which led to this explosion:

The Mammoth seam is supposed to invert and double back on itself at the bottom of the Kohinoor workings, the deepest point of which is near the bottom of the new slope, rising gradually east. The gan ways in that direction strike it one after another in the four lower lifts. Whenever the top is broken through to the upper lap of the seam, where it doubles itself back, a mass of soft shelly coal and black sooty coal dirt generally runs out until it fills up the place; and this gives off large volumes of gas, only ceasing when the aperture from which it flows becomes choked by being filled up.

The fall which closed the heading and filled the counter chute with gas on the night preceding the accident, resulted from the pillar between the two inside breasts being broken. The fall gave off considerable gas. A split of air was passed from No. 4 lift above down through these breasts and, before the heading was closed, ventilated the counter. Another split passed down through Mulhall's breast to keep that end of the section clear. The main current passed down the slope, along the gangway, passed the breasts, up the counter chute, and into the return airway. The other two splits entered the airway further out, and all passed out in the airway above the slope. These splits, which were only passing through small openings, were intended to keep these open breasts clear, and although they were scarcely felt in such large high places, the miners, who were merely loading falls of coal, testified that they never found gas in their breasts. The air thus passing through these open breasts might be sufficient to keep them clear under ordinary circumstances, but after the fall the conditions were materially changed. The extra volume of gas given off by the fall would vitiate the air in any stagnant place between these two splits, which place, from the position of the pillar-heading, might be in Mulhall's breast. The relative height again would effect accumulations.

When the fire-boss removed the stopping brattice in the side of the counter, he reduced the resistance of the main current in the gangway, and consequently the volume in the other two splits, as they all came from and went to the same current. This aggravated the circumstances and permitted gases to accumulate in Mulhall's breast. The gas displaced from

the counter was not likely to pass into the breasts, owing to the arrangement of the currents.

If a current of fifteen thousand cubic feet per minute had been passing through this section of the colliery, the explosion might have been averted. If Mulhall had gone home when told to do so, it would probably not have occurred; or if nothing but safety-lamps in the hands of competent persons had been allowed in this district of the mine, the five lives and thousands of dollars' worth of property might have been saved.

The explosion brought on a squeeze in that vicinity, the falls increased, and the running breast became filled with debris, and the whole section with gas. The current was reversed so as to pass upwards through this lift, but, owing to the over-cast being too small to carry both this and the air from the east upper workings over the slope, the whole current failed to move the gas. The current was then turned down into No. 4 lift, and through the breasts. The whole current being now concentrated on this section, and the place from whence the gas was flowing being choked up, this arrangement overpowered the gas, and in three or four days the breasts were clear. While the lift was filled with gas, great caution had to be exercised on account of the frequent falls of top coal.

The fan being driven by compressed air, a stove was placed alongside the exhaust pipe to prevent freezing. I disliked the idea of so large a volume of gas being diverted through a fan having a light wooden covering, with a stove so close. Fearing some heavy fall might displace the gas and the concussion damage the fan-casing, we removed the stove; but the engine would not work. A small pipe was then run from the boilers, and live steam put into the valve-chest of the engine, which kept it to the required temperature.

It is difficult to convey distinctly an idea of these openings, owing to the gangways being driven on both the top and bottom sections of the seam, causing them to cross over each other as the change of dip affects their directions, and cannot be minutely described within the limits of a report. The accompanying map and diagram No. 6 will assist the reader in forming an idea of the scene of this disaster.

No. 2.—July 31. Thomas Robertson, aged forty-one, wife and five children, a miner employed at the William Penn colliery of the William Penn Coal Company.

Thomas Robertson was suffocated with gas while attempting to displace an accumulation from his working place.

The scene of this accident was in breast No. 15, west gangway of new slope, which is the second level below the shaft. The Mammoth seam here is in fine condition, and at an angle of dip of from 40° to 50°. The gangways are driven in the bottom, and the air-way near the top of the seam. The air current passes down the slope, splits to the east and west sides, passes along the gangways to the last open chute, immediately outside of which a door is placed with a large wooden pipe inserted and carried in

to ventilate the gangways and unfinished chutes. These are the only doors in use. The breasts are opened with two chutes; the outside one with its man-way open to the gangway, forms the intake, while the inside man-way has an air-tight battery with a man-door to disconnect it from the gangway, behind which the cross-hole connects it with the return air-way. The small coal which runs down the man-way being allowed to accumulate at this battery, assists to keep it air-tight. The coal necessary to keep the breast working is drawn from the battery on the intake side—both only being used to empty the breast when finished. A heading is put through the pillar half way up with a man-door to accommodate the fire-boss, and also one at the top to keep the breast clear when finished. By this arrangement each breast is separate, with one man-way connected with the intake, and the other with the return airways, causing a split to pass up each breast on the outside, across the face, down the inside man-way to the return air-way leading to the fan.

Regulating slide doors are placed in the cross-holes between the chutes and air-way, by which the quantity of air in each breast is controlled by partially opening or closing them to increase or decrease respectively the resistances. thus enabling the air to be divided among the breasts to suit circumstances. The return air-ways discharge into a main air-way driven parallel with the slope, at the top of which is placed an exhaust fan, the steam for which is supplied from the boilers on the surface.

The testimony given at the coroner's inquest developed the following facts: When the fire-boss examined the breast that morning, he found that gas had accumulated to a point about eight yards from the face. He informed the miners of the fact, and requested them to wait until his other duties were attended to. Having returned, he accompanied Robertson to the breast, and went up the intake side to see what could be done to displace the gas. Failing to move it by brushing with their coats, they went up the return side to see if the man-way was blocked. Meeting the gas at the same level, they extinguished Robertson's lamp, intending that he should remain and brush, while the fire-boss accompanied the other miner up the intake man-way for the same purpose, thinking that by agitating the gas at both ends they might be able to move it. After brushing vigorously for a short time without effect, the fire-boss called Robertson, and told him to come down, as they could not move it. Robertson answered, "All right." The fire-boss then told the miner to open the slide between this and the next outside breast, while he went down to close its return, and make use of both splits to dislodge the gas. While Robertson's partner was returning from the slide-door he heard a groan, and suspecting the cause, hurried down, called the fire-boss from the regulator, and both went to extricate Robertson, whose feet were fast behind a step. The gas being down over his body, prevented the fire-boss from getting up far enough to release him. Help was called, and after unsuccessful efforts by several parties, the other slides were closed, and the whole current in the gangway turned up the

breast; but two hours elapsed before he could be reached, when life was extinct.

This accident was the result of that disregard of danger generated by familiarity. Robertson was a competent miner and had often dealt with such conditions.

I examined the place next morning and found the current at the face very weak owing to its leaking across the gob, as it passed up the manway, which, in places, was small in area. The face remained the same as the miners left it on the Saturday evening preceding the accident. On the return side a plank had been lifted off and a piece of lagging thrown across in such a manner that the falling coal would not block the air at the top of the manway. The general aspect of the place indicated that the miners understood their business. The small manway was due to the looseness of the top benches near the upper part of the breast. They had to keep the breast full close to the face by putting the coal down the manways and only mining the bottom bench, thus obviating any risk of damaging the manways by drawing the coal at the main battery. The breast being nearly finished, it was the intention to drive the top heading, draw down the breast, and if the top benches did not fall to blast them down, using the heading as a safe base to commence operations in case of damage to the manways. When I saw the breast the current was keeping it clear, and the accumulation must have been the result of more gas or less air, or the favorite "outburst" theory might also be advanced as the cause of the place filling with gas—the weak current not being sufficient under such circumstances to overpower it.

My opinion is that the fan was permitted to run slowly between Saturday evening and Monday morning, thus allowing the gas to accumulate. When the ventilating pressure was restored it was insufficient to overcome the buoyant power of the gas, leaking places leaving the air pass across underneath. Even when the whole current in the gangway was turned on it, several hours were required in removing about twenty feet, as measured on the manway. The principle of splitting is the correct one if not carried to extremes. If the lifts were one hundred and fifty feet instead of three hundred feet it would work well, but when a breast is from eighty to ninety yards long the leakage through the loose coal and resistance in the long narrow manways weaken the current at the face, resulting in accumulation of gas whenever the ventilating pressure is slightly reduced. If two breasts were included in each split, the pillar between them having heading at a distance of thirty-six feet, and all, excepting the upper one, closed tight, all the air could be kept to, at least, the upper heading, while the short distance between the heading and the face could easily be managed, and the risk of similar accidents be diminished.

No. 3.—November 20. John H. Williams, aged twenty-seven, wife and one child, a fire-boss employed at the Mahanoy City colliery of the Philadelphia and Reading Coal and Iron Company.

John H. Williams was fatally injured by an explosion of gas while making the usual examination in the morning. He was alone at the time of the accident. Our opinion of the cause of this accident is based on circumstantial evidence.

Being at the colliery that morning, I met Mr. Kilgore, the boss, on the gangway with the safety-lamp which he found in the place where the explosion occurred. Examination showed that the lamp had been unscrewed and not broken apart. On reaching the breast I found it clear and the ventilation in average condition. The breast being driven the required distance from the slant road, the miners blasted down some top coal which lay in a heap in the upper corner of the face, while the space from which the coal fell formed a recess in the top over the heap. The air current entered the breast from a heading on the upper side, some twelve yards back, passed diagonally across the breast, and out by a heading on the lower side, near the face.

This section of the colliery generates very little gas. From the general appearance of the place, I formed the opinion that the fan had been permitted to run slowly between Saturday evening and Monday morning, thus allowing the gas to accumulate in the recess over the heap of coal, which was in the upper corner, and eight or ten feet above the air line; and was not distributed by the current when the ventilating pressure was restored.

The probabilities are that when Williams found the gas he got down off the heap, went back, and stood his lamp in the intake. Then, taking his canvas, got on the heap and commenced brushing. When he supposed that he had it clear, he went for the lamp to make a second examination. If the current had been upwards, the gas would have been easily displaced, but being downwards only that which was forced into the current passed off. The remainder was dispelled from around Williams, but floated back into the recess when the agitation ceased. The time consumed by Williams in getting his lamp, trimming it, and getting up again, was sufficient to allow the greater part of the gas to get back in mixed waves. On raising the lamp the second time it might not have shown gas, and, believing the place clear, he thoughtlessly unscrewed the lamp to inspect the condition of the top coal.

Williams' injuries were not considered fatal, but he died on the evening of the next day, having caught cold from the long exposure in passing along the gangway in the dark for nearly a mile without assistance.

To unscrew a safety-lamp under such conditions showed a want of either knowledge, caution, or reflection, and we hope this case may be a warning to others in future, so that they may never allow themselves to be controlled by sudden impulses while in close proximity to dangerous accumulations of gas.

Fatal Accidents from Shots.

No. 1.—May 18. Henry Der, aged thirty-five, wife and two children, a miner employed at the Kehley Run colliery of the Thomas Coal Company.

Henry Der and his partner worked in a breast on the top section of the Mammoth seam, which was very hard, while the angle of dip required manways on the rib to reach the face. They tamped three shots, fired one, and went back among the smoke to light the remaining two. On getting away, Der, by mistake, got down outside of the manway, and on discovering his situation he started to climb back and over the upper juggler into the manway. This necessarily consumed time, and the shots fired just as he got over the juggler. A piece of coal struck him on the head and fractured his skull, causing his death two days afterwards.

The ventilation was not sufficient at this point to rapidly carry away the smoke, and the men, who were working by the day, adopted the bad practice of firing more than one shot at a time, and then waiting until the smoke cleared off. I called the attention of the management to the facts and had the practice prohibited and the ventilation improved.

No. 2.—September 22. Joseph Ewanes, aged thirty-two, wife and three children in Poland, a miner employed at the Schuylkill colliery of the Philadelphia and Reading Coal and Iron Company.

Joseph Ewanes and his laborer were driving a gangway. Two shots were lit at once, only one of which exploded. Ewanes immediately ran back among the smoke to relight the other. As he did not go back to get another squib from the box in his coat pocket, it is supposed that the concussion of the one shot extinguished the match of the other, and that Ewanes relit the partially burnt match, which, being short, went off before he could get away. The squib could scarcely have hung fire, as he was in at the face long enough to have pulled it out and examined it. The shot did not explode for a short time after he reached the face, causing the laborer to think that Ewanes had re-adjusted and relit the match. After the shot exploded the laborer ran in and found him covered with coal and dead.

Fatal Accidents—Miscellaneous.

No. 1.—March 8. Anthony Gilenois, aged thirty-three, single, a miner employed at the Shenandoah City colliery of the Philadelphia and Reading Coal and Iron Company.

This accident occurred in the top split workings of the Mammoth seam, which is nearly horizontal. The cars are loaded in the breasts, which are about thirty feet wide and fourteen to sixteen feet high.

From the information received of the parties concerned, and by the inspection of the place where it occurred, I find the following to be the cause which led to this accident:

The miners who were employed in the breast before Gilenois had worked until the top became dangerous. A piece of slate sixteen inches in thickness, and extending back from the face fifteen feet in one direction, and across the whole width of the breast in the other became loose, and was drawn from a slip running across near the face. The boss ordered the miner to secure it, but as the props had to be fifteen feet in length, and

from eight to ten inches in diameter, two men were unable to handle them. It would have taken four men more than a day to put the place in a safe condition. The boss refusing to properly remunerate the miners, they left. The company men then stood six props in the place, which were supposed to be sufficient to secure it, and Gilenois with his partner were employed to work in it. After working a short time, Gilenois wanted to stand another prop, and the boss furnished two men to assist him in doing so. They put it up in a very unworkmanlike manner, putting two small wedges over it in place of a cap piece. Pieces from a shot knocked the prop down, and it was erected again in the same bungling manner. Some one told Gilenois to tie the props together with plank, but he replied that he had no nails. The next pieces of coal that struck the prop shook the wedges out. Afterwards, the men while loading coal, picked out slate and throwing it in the gob, knocked the prop off its balance, and falling over it struck Gilenois on the head, and killed him.

When I examined the place it was in a very dangerous condition. By climbing up on the bottom bench at the face, I found that the huge piece of slate mentioned was parted from the main top, the back end resting on the six props, but for a space of three or four yards from the face it was unsecured. A switch tongue had been used as a wedge, and had been driven over it to break down the part inside the props. The slate proving too strong, the wedge was left stick to be used as an indicator to show when the slate was sagging, which could be ascertained by examining the wedge, and noticing whether it was becoming loose. While I was there, the fire-boss took hold of the wedge, and finding it loose, said that the slate had drawn since the last trial. I ordered the place to be either secured or abandoned. This accident is noticed at length for the purpose of showing how matters of this kind are managed at some of the collieries. Instead of taking bad top down by blasting or properly securing it with props, it is left until a fatal accident occurs, because contract miners cannot afford to do the work properly. The place is then abandoned on account of its dangerous condition. The rails are then taken out, and a pretense of taking the coal from the other side of the pillar is made as an excuse. A few pieces of plank and a few nails would have prevented this accident.

No. 2.—July 28. Patrick Hurley, aged sixty, wife and seven children, a miner employed at the West Shenandoah colliery, of the Philadelphia and Reading Coal and Iron Company.

Where this accident occurred, the breasts which are at an angle of 30°, are opened with one chute. The men are paid by the car, and the coal is loaded from a platform. A battery is placed in the chute to prevent the coal rushing, and also to secure the loader from shots. Some large pieces having blocked the battery, Hurley took his drill and attempted to loosen the coal. While doing so his foot slipped, and falling among the rushing coal, he was crushed against the battery prop and killed.

On examination I found the place in average condition as to safety. The

accident was the result of a misstep or slip of the foot, which, in the case of a younger man, might not have resulted in such a serious consequence.

Fatal Accidents from Machinery.

No. 1.—October 24. William Northey, aged thirteen years, a slate-picker at the Tunnel Ridge colliery of the Philadelphia and Reading Coal and Iron Company.

William Northey had occasion to go outside the breaker. When returning, and in going to his place, he passed a platform where the "bone" coal is chipped and freed of the slate, and put into a small chute, which conducts the coal by gravity to the monkey rolls. The boy who did this was away at the shop getting his pick sharpened. Northey, in passing, took a spare pick and struck at a piece of coal, and, in doing so, accidentally let the pick slide down the chute. Fearing that it might damage the roller-teeth, he hastily followed it, when one of his legs slipped into the rollers, was crushed into a shapeless mass, and he died the same evening.

IMPROVEMENTS MADE AT THE COLLIERIES OF THE SHENANDOAH DISTRICT DURING THE YEAR 1882.

Hammond.

A tunnel has been driven eighty-two yards north from the Mammoth to the Buck Mountain seam.

Girard Mammoth.

A new slope has been sunk on the Buck Mountain seam, one hundred and sixty yards. Also, a new hoisting engine and boilers.

Shenandoah City.

A new drift has been opened on the seven-foot seam. A new twelve-foot exhaust fan has also been erected on the Buck Mountain seam.

Knickerbocker.

A water level tunnel has been driven ninety-three yards from the Skidmore to the Buck Mountain seam.

Boston Run.

A tunnel has been driven fifty-seven yards, on the lower level, from the Mammoth to the seven-foot and Buck Mountain seams.

St. Nicholas.

A tunnel has been driven sixty-six yards, on the lower level, from the Mammoth to the Buck Mountain seam.

Tunnel Ridge.

A tunnel has been driven thirty-two yards from the Buck Mountain to the seven-foot seam, west of the fault.

Elmwood.

A tunnel has been driven seventy-three yards, on the lower level, from the Mammoth to the seven-foot and Buck Mountain seams. The breaker has also been rebuilt, and eight new boilers erected.

Mahanoy City.

A new fifteen-foot exhaust fan has been placed in an air-way driven in the north dip of the Primrose seam, to ventilate both it and the Mammoth. Also, a new pump to drain the inside slope has been erected, and is driven by compressed air.

Cuyler.

A new slope has been driven from the water level to the bottom of the basin in the Buck Mountain seam.

William Penn.

A pair of twenty-four-inch Allison air compressors has been erected to run the underground hoisting engines and pumps. A new fan has been put in the inside slope, on the top of the air-way, to ventilate the lower level. A new road has been graded from the top of the shaft, and a new coal plane erected to elevate cars to the level of the breaker dump. A water-level drift has been opened on the Holmes seam. Also, six new boilers were erected.

Packer, No. 2.

A new breaker has been built on the site of the old one, which was burned down October 12, 1882.

Oakdale.

An air-shaft, 5 feet by 5 feet, has been sunk to improve the ventilation by means of a steam jet.

Kohinoor.

A new hoisting shaft has been sunk, and a pair of horizontal engines and dump cages constructed; also a new breaker with a coal plane have been built. These improvements are to mine the Primrose seam, and will be known as the Kohinoor, No. 2.

Kehley's Run.

A new fan has been erected to ventilate the Nine-Foot and Buck Mountain seams by forcing the air-current down an airway on the Mammoth seam and in through the tunnel, the air-shaft on each seam at both sides being the returns. The gangway on the Mammoth seam, west from No. 1 slope, which was closed by the mine fire in 1880, was re-opened. The water-level drift on the Buck Mountain has been re-opened and a counter chute driven to connect with the lower level.

East Bear Ridge.

Mining has been commenced on the flat Mammoth seam, on top of Bear ridge, by taking off the surface.

Lawrence.

A pump slope has been sunk to the fourth level, over thirteen hundred feet from the surface, on an angle of fifty degrees, for the purpose of opening the fourth lift. A new trestle was built under the dump chute; a new plane erected to elevate coal to the upper boilers, and the breaker has been generally repaired.

Stanton.

A new forty horse-power fan engine has been erected and the hoisting engines enlarged from ninety horse-power to one hundred and forty horse-power.

Glendon.

A new addition was made to the breaker. Two jigs with twenty horse-power engines, a new dirt plane with forty horse-power engine, and three new boilers have been erected, and a new steam pump put in the slope. Also a new feed pump and pipes for the slope boilers, and a new pump to feed the jigs in the breaker were erected. A tunnel has also been driven from the Sixteen-Foot to the Seven-Foot seams, and a backswitch tunnel has been driven at the top of the new inside slope.

Honeybrook, No. 4.

A new self-acting inside plane has been driven on the Mammoth seam.

Honeybrook, No. 5.

A new seven-ton locomotive has been procured to haul the coal from No. 8 slope. A railroad has been graded from No. 5 breaker to Green Mountain, a distance of four and a half miles, and a slope sunk one hundred and twenty yards on the Buck Mountain seam. This new colliery is located in Hazle township, Schuylkill county. The coal will be prepared in the breakers at Honeybrook.

On Accidents from Falls.

Of the fifteen fatal accidents from falls, only three occured in places where the miner could not examine or secure the top. The other twelve could have been prevented by timbering, propping, or by time spent in making examinations, and removing the loose pieces overhead. Thus seventy per cent. of the accidents from falls were preventible, had the *cost* not been taken into account.

On Accidents from Gas.

There were three fatal accidents during the year; one an explosion, resulting in the loss of five lives, which is described in the report in detail; another, an explosion resulting in one death, caused by opening a safety-lamp; and another, a case of suffocation, caused by an attempt to remove an accumulation of gas from a breast.

There were eighteen non-fatal accidents from gas during the year, the majority of which were caused by the explosion of small quantities of gas in close places, such as chutes, and they might all have been prevented by the use of safety-lamps.

I find that three fourths of the accidents from gas occur either on Mondays or days when the collieries resume work, after being idle, and as all mines generating gas are ventilated with fans, I am of the opinion that the cause, in a great measure, lies in allowing the fans to be slowed while the collieries are idle.

The ventilation of the collieries has greatly improved during the past two years, as is shown by the number of new fans that have been erected, the number of air connections that have been made, for the purpose of reducing resistance by shortening the air-courses, pillar headings made larger in area, and more attention paid to distribution in the workings. From all these sources a marked improvement in ventilation has resulted. However, in the best ventilated colliery there are places where the current is slow, and almost imperceptible, and in which, whenever the fan is allowed to run slow, accumulations of gas form. When the fan speed and ventilating pressure are restored, they are not powerful enough to overcome the buoyant power of the gas.

At many collieries, when work is suspended on Saturday, or when the colliery is to be idle a day, the fan is allowed to run at a mere nominal speed to economize steam. Then at night when all the steam made is required to run the pumps, the fan is frequently neglected as of less importance, because if the water is allowed to rise on the bottom everybody will know it, and it may throw the colliery idle, but if the steam is turned on just before the fire-boss goes down in the morning, no one will know but that the fan has been run at full speed all night.

Although it does not follow that an accident will occur from allowing gas to accumulate by slowing the fan, because, with proper precautions, such accumulations may be removed. Nevertheless, every accumulation of gas is a source of danger, and therefore the sooner the practice of slowing the fan is stopped the better. As our fans are not fitted with "indicators," we have no means of proving that they have been slowed, and as a check on those in charge of fans at collieries generating dangerous volumes of gas, I am of the opinion that the application of indicators would be an improvement.

If the fire-boss, before going down in the morning, could see by the "indicator" that the fan had been slowed during the night, and the water-gauge had fallen to correspond, he would expect to find gas in the fast places of the mine.

If the fan had been run at full speed during the night, and the water-gauge had fallen, he would expect to find a door left open, a battery emptied, or some opening made, which allowed the air to return without meeting the usual resistance.

If the fan had been kept at its usual speed, and the water-gauge had risen, he would expect blocked man-ways, headings, or other obstructions, to the air currents. In any case he would have the advantage of information that he would not have without an indicator.

The indicator will work to the best advantage where the ventilating pressures are high, as at some of the English collieries where they are applied, and at our collieries, where the water-gauge is an inch and over, it will, at least, show when a door has been left open. It will, in all cases, register the speed of the fan.

Mine Fires.

Mine fires are becoming more frequent by shots igniting feeders of gas. Attention should be paid to this subject. The aid of inventive genius should be called in to provide means for putting out such fires.

If we could obtain an explosive which produced no flame it would be the most valuable invention in regard to mining since Sir Humphrey Davy's gauze-lamp.

In places where mine fires are likely to occur, the mine should be carefully examined to see that nothing is left burning after the men leave work. At some places dynamite and fuse instead of powder and squibs are sometimes used to prevent the ignition of feeders of gas.

At a few collieries in the anthracite coal region a line of iron tubing, attached to the pump column, is carried along the gangway with T's and plugs inserted at proper intervals to make hose connections to reach the breasts.

In collieries where the angle of dip is very steep, and the bottom heaves and dams water back on the gangway, these pipes will soon corrode and be rendered useless. This can be prevented by fastening them to the timber on the upper side; but as retimbering is always going on in such places, they will be a constant source of annoyance. Another great objection to their use is the expense they involve. They are, however, a very efficient means of applying water quickly to a fire; and time is everything in dealing with such cases. Hand fire-engines, to run on the mine track, could be used and supplied with water by tenders for the purpose.

Torpedoes might be applied in some cases to extinguish flame and prevent the coal becoming fairly ignited.

The only appliance in general use in this district is the fire extinguisher, which proves very valuable in some cases. As this is a very wide field for useful invention, I thought it proper to call attention to the matter in this report.

COMPARATIVE STATEMENT OF CASUALTIES, TONNAGE, AND EMPLOYEES, FOR THREE YEARS, IN THE SECOND OR SHENANDOAH DIVISION OF MINING DISTRICT OF SCHUYLKILL.

YEAR.	Killed.	Injured.	Total.	Total number of employés.	Number of employés to each casualty.	Total number of tons of coal mined.	Number tons of coal mined to each fatal casualty.	Number tons of coal mined to each non-fatal casualty.	Ratio tons of coal mined to each casualty.	Number tons of coal to each employé.
1880, ...	39	92	131	11,471	$87\frac{48}{100}$	3,753,785.14	96,250.18	40,802	28,654.17	327.04
1881, ...	34	149	183	10,911	$59\frac{114}{183}$	4,504,624.06	132,488.01	30,232.02	24,615.02	412.01
1882, ...	40	167	207	12,361	$59\frac{148}{207}$	4,661,024.12	116,525.02	27,910.01	22,517	377.09
	113	408	521	. . . . .	. . . .	12,919,434.12				
	$37\frac{2}{3}$	136	$173\frac{2}{3}$	11,581	69	4,306,478.04	115,088	32,981	25,262.06	372.04

TABLE *showing the nationality of the persons* FATALLY *injured in the Shenandoah District, in the year 1882.*

NATIONALITY.	Men.	Boys.	Total.
English,	4	2	6
Welsh,	2	. . . .	2
Scotch,	1	. . . .	1
Irish,	17	4	21
German,	5	1	6
Polish,	4	. . . .	4
Total,	33	7	40

TABLE *showing the Nationality of the persons* INJURED *in the Shenandoah District, in the year 1882.*

NATIONALITY.	Men.	Boys.	Total.
English,	18	. . . .	18
Welsh,	20	. . . .	20
Scotch,	3	. . . .	3
Irish,	70	6	76
German,	31	1	32
Polish,	18	. . . .	18
Total,	160	7	167

CASUALTIES FOR THE YEAR 1882.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept	Oct.	Nov.	Dec.	Total	
Fatal—Inside.														
Falls,	1		2	1	3		1		2	2	1	2	15	
Cars,		1	1		1			1			1	1	6	
Gas,					5		1				1		7	
Shots and powder,					1				1				2	
On slopes,		1							1			1	3	
Miscellaneous,			1				1						2	35
Fatal—Outside.														
Cars and dumpers,						1				1			2	
Machinery,										1			1	
On planes,			2										2	5
Miscellaneous.														
														40
Non-fatal—Inside.														
Falls,	6	4	7	5	4	10	4	6	3	4	1	3	57	
Cars,	2	1	5	4	1	3	1	1	1	4		1	24	
Explosions of gas,	1			1	4	1	2	1		1	2	5	18	
Shots and powder,	2		1	1	2	1	1						8	
On slopes,			2	1			1			2			6	
Miscellaneous,		1	3	3	1	1	3	1	2	3	3	1	22	135
Non-fatal—Outside.														
Cars and dumpers,	1	2	3	2					1	1	2	2	14	
Machinery,							1	1		1	2	1	6	
On planes,											1	1	2	
Miscellaneous,	1	1				1	1	4		1	1		10	32
														167

REGISTER OF FATAL CASUALTIES.

DATE.	Names.	Collieries.	Occupation.	Age.	Married or single.	Children.	Remarks.
Jan. 10	Daniel Molcoy,	William Penn,	Miner,	25			Fatally injured, skull fractured; struck on head by piece of coal; died.
Feb. 22	Patrick Devanny,	Conner,	Miner,	40	Married,	5	Fatally injured; run over by mine car in breast; died.
26	John Cotter,	West Bear Ridge,	Driver,	21	Single,		Fatally injured; was thrown off cage down slope; died.
Mar. 1	Patrick Campbell,	Turkey Run,	Driver,	26	Married,	2	Fatally injured; arm crushed between top of car and top of gangway; died.
2	Michael Brennan,	Indian Ridge,	Miner,	35	Married,	3	Killed; fall of top coal in breast.
7	Martin Joyce,	Schuylkill,	Miner,	51	Single,		Killed; fall of top coal in breast.
8	Anthony Gilenois,	Shenandoah City,	Miner,	33	Single,		Killed; prop fell on him in breast.
14	John Monaghan,	Indian Ridge, coal,	Plane-runner,	17	Single,		Killed by mine car.
14	Frank Manning,	Indian Ridge, coal,	Plane spragger	15	Single,		Fatally injured by mine car; died.
April 10	James Cuff,	Packer, No. 4,	Miner,	35	Married,	5	Killed; fall of coal at face of breast.
May 1	Michael Boylan,	Kohinoor,	Miner,	45	Married,	4	Killed; fall of coal in breast.
5	Patrick Tague,	Cuyler,	Laborer,	21	Single,		Killed; fall of coal from upper side of heading, near face.
17	Thomas Haley,	Glendon,	Miner,	36	Married,	2	Fatally injured; fall of coal and slate in breast.
18	Henry Derr,	Kehley Run,	Miner,	35	Married,	2	Fatally injured; struck by piece of coal from shot.
23	George Snyder,	Knickerbocker,	Door-boy,	13			Fatally injured; attempted to board trip of wagons while in motion.
24	Martin Mulhall,	Kohinoor,	Miner,	60	Widower,	5	Killed, ⎫
24	James Mulhall,	Kohinoor,	Miner,	24	Single,		Killed, ⎪
24	Owen Gallacher,	Kohinoor,	Miner,	35	Married,	3	Killed, ⎬ Explosion of gas.
24	Samuel G. Hugo,	Kohinoor,	Driver,	19	Single,		Killed, ⎪
24	James McDonald,	Kohinoor,	Door-boy,	13			Killed, ⎭
June 6	Thomas Else,	Packer, No. 2,	Conductor,	16	Single,		Killed; run over by mine locomotive.
July 7	Patrick Lyons,	Packer, No. 3,	Miner,	32	Married,	2	Killed; fall of coal in breast.
28	Patrick Hurley,	West Shenandoah,	Miner,	60	Married,	7	Killed; caught in battery while starting chute.
31	Thomas Robertson,	William Penn,	Miner,	41	Married,	5	Suffocated by gas in breast manway.
Aug. 1	John Tempest,	West Shenandoah,	Oiler,	15			Fatally injured; squeezed between the top rails of two cars while riding on the bumpers; died.
Sept. 11	Joseph Richards,	Packer, No. 1,	Inside boss,	40	Married,	7	Killed; struck by falling timbers while riding up slope.
21	James Engle,	West Lehigh,	Laborer,	37	Single,		Killed; fall of slate in gangway.
21	Thomas Jenkins,	North Mahanoy,	Miner,	36	Married,		Fatally injured; fall of slate in breast.
22	Joseph Ewanes,	Schuylkill,	Miner,	32	Married,	3	Killed by a shot.
Oct. 7	Thomas Hopkins,	Turkey Run,	Miner,	32	Widower,	2	Killed; jammed between car and timber.
21	John Szlinski,	Elmwood,	Laborer,	25	Married,	1	Fatally injured; run over by railroad car; died.
24	William Northey,	Tunnel Ridge,	Slate-picker,	13			Killed; caught in monkey rolls.
25	Joseph Brill,	Kohinoor,	Miner,	40	Widower,	4	Killed; fall of coal.
Nov. 20	John H. Williams,	Mahanoy City,	Fire-boss,	27	Married,	1	Fatally injured; explosion of gas; died.
20	Jonathan Kendrick,	Girard,	Driver,	18	Single,		Killed; fell under cars while attempting to unhitch mule.
24	Frank Blew,	Copley,	Laborer,	16	Single,		Killed; fall of coal in chute.
Dec. 6	James Tahanney,	Coal Run,	Miner,	22	Single,		Killed; fall of top coal in breast.
8	Daniel McAnnally,	Lawrence,	Repairman,	20	Single,		Fatally injured; fell down slope while placing gun-boat on track; died.
23	Martin Maley,	Plank Ridge,	Driver,	16	Single,		Killed; crushed between top of car and rock.
30	Conrad Sellbach,	Shenandoah City,	Miner,	44	Married,	7	Killed; struck by piece of coal.

NON-FATAL CASUALTIES.

DATE.	Name.	Colliery.	Occupation.	Remarks.
Jan. 3	James Welsh,	William Penn,	Miner,	Injured by fall of coal.
3	Thomas Taylor,	Knickerbocker,	Miner,	Head cut and ankle sprained; fall of coal.
4	James Tempest,	Indian Ridge,	Miner,	Back injured; fall of coal.
5	Michael Fulmer,	Kohinoor,	Driver,	Body injured; jammed between mine cars.
9	John Flynn,	Indian Ridge,	Teamster,	Finger broken; kicked by a mule.
10	Charles Thomas,	Primrose,	Miner,	Slightly injured; struck by piece of coal.
10	Michael Creedan,	Indian Ridge,	Driver,	Injured; fell under mine cars.
12	James Carr,	Saint Nicholas,	Miner,	Face and hands burned with powder.
17	Francis Oonnon,	Honey Brook, No. 4,	Miner,	Leg injured; fall of coal.
17	John O'Connell,	Bear Run,	Miner,	Back injured; fall of coal.
19	David Williams,	William Penn,	Miner,	Face burned; explosion of gas.
28	Alexander Garroway,	Draper,	Miner,	Foot and ankle injured; fall of coal.
31	James Ashfield,	Saint Nicholas,	Driver,	Collar-bone broken; fell under dumper.
Feb. 2	John Dumm,	Ellangowen,	Loader,	Arm bruised by mine cars.
3	William Thornton,	Plank Ridge,	Miner,	Head and arm bruised; fall of coal.
7	Martin Heller,	Knickerbocker,	Carpenter,	Thigh broken; struck by lever of car.
8	Joseph Gel,	Kohinoor,	Miner,	Leg injured; a piece of coal rolled on him.
8	John Goulden,	Saint Nicholas,	Driver,	Leg broken; run over by mine car.
10	James Haggerty,	Honey Brook, No. 5,	Door-boy,	Head injured; was thrown off mule.
20	John Shugrue,	Primrose,	Miner,	Body injured; caught between coal and prop.
25	George Tarter,	Plank Ridge,	Miner,	Leg broken; a piece of coal fell on him in breast.
27	Michael McDermont,	Plank Ridge,	Miner,	Injured across kidneys; fall of coal.
March 2	William Bolunis,	Kohinoor,	Miner,	Leg broken; rush of coal in breast.
7	Patrick Munley,	Hammond,	Laborer,	Finger crushed by mine cars.
7	Louis Mender,	Ellangowen,	Miner,	Leg broken; fall of coal.
10	Martin o'Neil,	Schuylkill,	Miner,	Head, back, and breast injured; struck by piece of coal.
13	Jeff. Berger,	North Mahanoy,	Dirt bankman,	Thumb mashed; caught between wheel and sprag of dumper.
13	John A. Nick,	Ellangowen,	Laborer,	Knee hurt; fell under dumper.
15	John Brennan,	Knickerbocker,	Bottom-man,	Leg injured by coal rolling down slope.
16	John Daniels,	Elmwood,	Miner,	Ribs broken by timber.
16	Patrick Dean,	Packer, No. 2,	Miner,	Seriously injured; fall of coal.
21	William Mills,	West Lehigh,	Miner,	Leg broken; struck by a roller while riding down slope.
21	Thomas Clasby,	Mahanoy City,	Laborer,	Hand cut; struck by coal flying from shot.
21	Henry Lord,	North Mahanoy,	Laborer,	Knee hurt; caught by side hooks while uncoupling cars.
23	Joseph Shortkin,	Ellangowen,	Laborer,	Foot injured; piece of coal struck him.
27	Charles Shine,	Shenandoah City,	Laborer,	Finger mashed; caught between sprag and coal.
28	Thomas Brown,	Schuylkill,	Miner,	Head cut; fall of coal in breast.
29	Patrick McOle,	Boston Run,	Driver,	Thigh injured; caught between two cars.
29	John Brennan,	Honey Brook, No. 1,	Miner,	Leg broken and foot bruised; fall of coal.
29	Martin Caff,	Ellangowen,	Miner,	Ribs fractured; fell while carring prop up breast.
30	Michael Caff,	William Penn,	Miner,	Body injured; caught by rush of coal in man-way.
30	Henry Holt,	William Penn,	Driver,	Body injured; squeezed between mine cars.
April 1	John Reeves,	Ellangowen,	Miner,	Fingers mashed; caught between pieces of rock.
3	William Gobolaski,	East Bear Ridge,	Miner,	Head and face burned by powder.
3	Patrick Stanford,	Schuylkill,	Miner,	Head and back injured; fall of coal.
3	Michael Welsh,	Shenandoah,	Miner,	Leg broken; fall of slate in breast.

April	6	Ralph Platt,	Beaver Run,	Inside boss,	Leg broken; thrown under cage.
	10	John Bidder,	West Shenandoah,	Teamster,	Hand mashed; caught between timber of breaker and dumper.
	11	Michael Schmalholtz,	Glendon,	Driver,	Arm mashed; run over by dumper.
	13	Michael Kane,	Boston Run,	Cager,	Arm dislocated while spragging car.
	14	Martin Mangan,	Saint Nicholas,	Miner,	Face and hands burned; explosion of gas at face of gangway.
	15	Michael Pickerson,	West Shenandoah,	Driver,	Collar-bone broken; fell while spragging car.
	17	Michael Donahoe,	Ellangowen,	Miner,	Leg broken while starting coal down chute.
	17	John Barrett,	Conner,	Laborer,	Cap of knee fractured; caught between prop and car.
	18	Philip McEntyre,	Girard,	Boss loader,	Foot crushed; struck by piece of coal.
	18	Charles Emmery,	Coal Run,	Miner,	Leg broken; fall of slate in breast.
	21	Thomas Hulahan,	Mahanoy City,	Driver,	Arm broken while turning team of mules.
	24	Daniel McDermont,	Indian Ridge,	Laborer,	Back hurt; fall of coal in breast.
	25	Jeremiah Scanlan,	Girard,	Miner,	Hip injured; fall of coal in breast.
May	10	Thomas Fishburn,	Knickerbocker,	Laborer,	Body bruised; fall of coal.
	10	Joseph Hillibush,	Knickerbocker,	Laborer,	Body bruised; fall of coal.
	11	William Roberts,	West Bear Ridge,	Miner,	Slightly burned; explosion of gas.
	17	William Warning,	Schuylkill,	Miner,	Foot and ankle bruised; fall of slate.
	18	Thomas Davis,	West Lehigh,	Miner,	Hip dislocated; fall of coal at face of air-way.
	19	Gerald Keating,	Draper,	Miner,	Slightly burned; explosion of gas.
	19	Anthony Kane,	Draper,	Miner,	Slightly burned; explosion of gas.
	24	Mathew Level,	Kohinoor,	Miner,	Cut on head; overcome by after-damp.
	24	John Lostopaski,	Kohinoor,	Miner,	Head cut; overcome by after-damp.
	24	John Lee,	Kohinoor,	Fire boss,	Slightly injured; overcome by after-damp.
	26	John Richards,	Elmwood,	Miner,	Face and hands burned; explosion of gas.
	29	Henry Jackson,	Gilberton,	Miner,	Back and face injured by shot blowing through pillar.
	29	Joseph Salvage,	Gilberton,	Miner,	Face injured by shot blowing through pillar.
	29	Peter Shaff,	Shenandoah,	Helper and oiler,	Hand severely cut; wagon run over it.
	29	John Kane,	Indian Ridge,	Miner,	Finger cut off; caught between lump of coal and wagon.
June	5	John Rusk,	Hammond,	Miner,	Body bruised; premature discharge of shot.
	5	Joseph Weaklam,	West Shenandoah,	Miner,	Back hurt; fall of coal in breast.
	6	John Keats,	Coal Run,	Miner,	Legs bruised; piece of slate rolled on him.
	9	Michael Ratigan,	Indian Ridge,	Miner,	Knee cut; piece of coal fell on him.
	9	George Ward,	Mahanoy City,	Driver,	Wrist broken; fell in jumping off mule.
	10	Patrick Dempsey,	Schuylkill,	Miner,	Foot injured; wagon run over his foot.
	10	John Williams,	Draper,	Miner,	Body injured; fall of coal.
	20	Patrick Duggan,	Bear Run,	Miner,	Head, shoulders, and foot injured; fall of coal.
	20	Michael Tallet,	Plank Ridge,	Miner,	Head cut; fall of coal in breast.
	21	Joseph Gei,	Kohinoor,	Miner,	Shoulders dislocated and wrist broken; fall of coal.
	21	William Busker,	Kohinoor,	Miner,	Leg broken and head cut; fall of coal.
	24	George Cochran,	Shenandoah City,	Miner,	Foot bruised; fall of coal.
	27	Theodore Monion,	Mahanoy City,	Miner,	Ankle broken; fall of coal.
	28	Peter Earley,	Indian Ridge,	Driver,	Arm cut; fell under mine car.
	28	John Trega,	Boston Run,	Loader,	Foot injured; was caught between wagons.
	29	Timothy Whittle,	Mahanoy City,	Miner,	Face and hands burned; explosion of gas.
	29	George Lambert,	Indian Ridge,	Miner,	Hip bruised; fall of slate.
	30	Thomas Cook,	Tunnel Ridge,	Miner,	Thigh injured; fall of coal.
July	1	David Bouis,	West Shenandoah,	Laborer,	Ribs broken; fall of slate.
	10	Senny Weeks,	Draper,	Laborer,	Foot injured; caught by car at bottom of slope.
	10	Christian Kennicker,	Bear Run,	Loader,	Finger cut off; piece of coal fell on it.
	18	Joseph Sweeney,	Indian Ridge,	Slate-picker,	Leg broken; caught in breaker screen.
	18	Joseph Glemmens,	East Bear Ridge,	Laborer,	Leg broken; fall of dirt at surface strippings.
	18	John Ruskey,	Shenandoah City,	Laborer,	Finger cut off; fall of coal and slate.
	20	Thomas Morgan,	William Penn,	Miner,	Leg broken; fall of coal in breast.

NON-FATAL CASUALTIES.—*Continued.*

DATE.	Name.	Collieries.	Occupation.	Remarks.
July 25	John Cavanaugh,	Gilberton,	Miner,	Head cut; fall of coal.
25	Frank Winkle,	Packer, No. 4,	Miner,	Face and hands burned; explosion of gas.
25	James Burton,	Packer, No. 4,	Miner,	Same as above.
25	Ben Townsend,	Draper,	Loader,	Foot injured; caught in battery.
27	Jacob Durong,	Knickerbocker,	Miner,	Head cut; struck by piece of coal.
27	John Brennan,	Packer, No. 1,	Miner,	Collar bone broken; fall of coal in breast.
31	James Gallagher,	Copley,	Loader,	Rib broken; caught between car and chute.
Aug. 1	John Carroll,	Ellangowen,	Miner,	Face and hands burned; explosion of gas.
3	Henry Heffner,	West Shenandoah,		Finger cut off; struck by piece of coal.
3	James Coyle,	Primrose,	Miner,	Leg broken; fall of coal.
4	Thomas Mollahay,	Indian Ridge,	Slate-picker,	Leg broken; stepped on a belt pulley.
9	Thomas Keating,	Draper,	Miner,	Head and arm injured; fall of slate.
11	Martin Whalen,	Indian Ridge,	Contractor,	Shoulder injured by mine car.
12	David Jones,	Tunnel Ridge,	Miner,	Severely bruised on side; fall of top coal.
18	Thomas S. Roberts,	Shenandoah City,	Miner,	Leg and back injured; fall of slate.
21	Richard Shipe,	Mahanoy City,	Teamster,	Leg broken; caught in pulley.
22	Charles Smith, junior,	Draper,	Driver,	Body injured; caught by bumpers of cars.
23	John Nube,	St. Nicholas,	Driver,	Two fingers broken; caught in wheel of car.
24	William Davis,	West Shenandoah,	Miner,	Leg broken and head cut; fall of coal.
28	Peter Tracey,	Girard Mammoth,	Miner,	Head cut; fall of slate.
Sept. 6	James Brennan,	Knickerbocker,	Miner,	Small bone in leg broken; fall of coal.
12	William Williams,	Knickerbocker,	Starter,	Foot crushed; caught between prop and piece of coal.
14	Mat. Moraccavage,	Ellangowen,	Loader,	Leg broken; caught between two lumps of coal.
15	Frank Bosch,	Shenandoah City,	Driver,	Finger cut off at second joint; run over by car.
15	John Gilfillan,	Plank Ridge,	Miner,	Jaw bone broken and body bruised; fall of coal at face of gangway.
16	Thomas Caufied,	Turkey Run,	Miner,	Small bone in leg broken and arm hurt; fall of slate.
17	F. F. Broclous,	Turkey Run,	Carpenter,	Sprained across breast while lifting drum spider of dirt plane engine.
18	Martin Barrett,	Conner,	Miner,	Ribs broken; squeezed between two cars.
Oct. 2	Frank Staley,	West Shenandoah,	Laborer,	Finger cut off; rail fell on him.
3	Patrick Murphy,	Turkey Run,	Miner,	Back injured; fall of coal.
3	Anthony Critcoust,	Ellangowan,	Loader,	Body squeezed between car and gangway timber.
3	Mitchell Mulcahey,	Indian Ridge,	Miner,	Toe cut off; fall of coal.
4	William Campbell,	Tunnel Ridge,	Miner,	Injured by explosion of gas.
4	James Monahan,	Conner,	Dirt car runner,	Body injured; squeezed between brake stick and side of car.
6	Joseph Mitchel,	Ellangowen,	Loader,	Leg injured; caught between two cars.
6	Michael Malowney,	Girard Mammoth,	Miner,	Eye injured; struck by piece of steel flying from wedge.
7	Frank Kane,	Bear Run,	Miner,	Back broken; struck by fall of coal.
7	John Taggart,	William Penn,	Driver,	Arm broken at bottom of slope; struck by slope roller.
16	Philip Bevan,	Draper,	Driver,	Leg broken; jammed between door frame.
23	Thomas Phillips,	Draper,	Miner,	Slightly burned; explosion of gas.
23	William Radigan,	West Shenandoah,	Slate-picker,	Internally injured; caught in elevators, in breaker.
24	John Murphy,	Hammond,	Miner,	Ribs and shoulders injured by slope timber.
26	Frank McCoy,	Hammond,	Platformman,	Body and chest injured; fell on piece of coal.
27	James Doyle,	Boston,	Miner,	Body injured while starting breast.
Nov. 2	John Mullahey,	Indian Ridge,	Slate-picker,	Arm broken; fell in breaker chute.
2	Patrick Flaharty,	Plank Ridge,	Oiler,	Leg broken; fell under wagon.

Nov.	3	Patrick Howe,	Hammond,	Miner,	Arm broken; fall of coal.
	13	John Molloy,	William Penn,	Miner,	Face and arm burned; explosion of gas.
	13	Patrick Molleoy,	William Penn,	Miner,	Same as above.
	14	John Thomas,	Primrose,	Driver,	Three ribs broken; fell under dumper.
	14	Thomas Brown,	Bear Run,	Laborer,	Leg fractured; a collar dragged by mule rolled on him.
	15	James Wilson,	Coal Run,	Driver,	Small bone in leg broken; was riding mule when it fell and rolled on him.
	21	John Gallagher,	Honey Brook, No. 1,	Slate-picker,	Leg crushed and afterwards amputated; fell in cog-wheel of screen.
	23	John Cunningham,	Indian Ridge,	Oiler,	Leg broken and head hurt; lump of coal fell on him from wagon.
	26	Griffith Griffiths,	St. Nicholas,	Laborer,	Leg broken; slipped on piece of sheet-iron and fell into elevator pit.
	27	Dennis Mahaney,	Draper,	Starter,	Body injured; fell in chute while starting battery.
Dec.	1	William Mills,	Packer, No. 4,	Miner,	Burned by explosion of gas.
	1	Michael Gorman,	Conner,	Miner,	Back and leg injured; fall of coal.
	5	Charles Bolleski,	Boston Run,	Miner,	Arm broken; struck by piece of coal.
	5	Alfred Goudge,	North Mahanoy,	Laborer,	Thigh broken; struck by piece of rock.
	5	Charles Davis,	Girard Mammoth,	Driver,	Leg broken; run over by dirt dumper.
	6	Francis McNellis,	Plank Ridge,	Oiler,	Collar bone broken; run over by empty mine car.
	11	Edward Gustheaver,	West Lehigh,	Miner,	Slightly burned; explosion of gas.
	11	August Backer,	West Lehigh,	Miner,	Same as above.
	11	Patrick Ferguson,	Cuyler,	Miner,	Ribs broken; run over by mine locomotive while entering mine to apply for work.
	15	Daniel Kriffer,	Lawrence,	Gigman,	Hand crushed and afterwards amputated; was caught in cog-wheels while oiling machinery.
	19	Henry Fry,	Packer, No. 4,	Repairman,	Burned by explosion of gas.
	19	George Link,	Packer, No. 4,	Repairman,	Same as above.
	22	Theodore Weise,	Turkey Run,	Laborer,	Arm broken; struck by piece of coal.
	27	Joseph Rice,	Plank Ridge,	Miner,	Back and hips injured; fall of top slate.

NAMES OF COLLIERIES in operation and Coal mined in the Mining District in Second or Shamokin Division of the Schuylkill District, for the years 1880, 1881, and 1882.

NAMES OF COLLIERIES.	Location of Collieries.	Names of Operators.	COAL PRODUCED.		
			1880.	1881.	1882.
Boston Run,	Boston Run,	Philadelphia and Reading Coal and Iron Company,	67,956 03	46,705.17	80,470.10
Conner,	Girardsville,	do. do. do.	107,995.09	137,251.01	138,293.10
Ellangowen,	Lanigans,	do. do. do,	187.261.18	240,977.05	244,120.15
Elmwood,	Mahanoy City,	do. do. do.	7,690.06	282.03	20,841.06
Girard,	Girardsville,	do. do. do.	81,894.13	69,567.07	104 647.08
Hammond,	do.	do. do. do.	70,649.19	95,274.09	93,838.13
Indian Ridge,	Shenandoah,	do. do. do.	118,338.11	143.562.07	144,602
Knickerbocker,	Yatesville,	do. do. do.	100,223.05	113,555.01	92,168.07
Mahanoy City,	Mahanoy City,	do. do. do.	98 613.17	114 339.13	113,339.16
North Mahanoy,	do.	do. do. do.	89.752	71.190.11	52,710.01
Plank Ridge,	Shenandoah,	do. do. do.	91,740.13	197,195.09	108.257.16
Schuylkill,	Mahanoy City,	do. do. do.	9,266.06	81,925.02	83.972.11
West Shenandoah,	Shenandoah,	do. do. do.	111.042.11	122,264.09	103.776.13
Shenandoah City,	do.	do. do. do.	52,689	84 819.11	116.213.09
Bear Run,	St. Nicholas,	do. do. do.	30,277.16	19,221.10	43,751.07
Furnace,	Gilberton,	do. do. do.	35.336.07		
Gilberton,	do.	do. do. do.	13,229 18	52,988 14	77,090.09
Girard Mammoth,	Raven Run,	do. do. do.	722.14	14 273.08	47,832.14
St. Nicholas,	St. Nicholas,	do. do. do.	69.931.09	111 031.10	106,400 05
Turkey Run,	Shenandoah,	do. do. do.	88,289.10	114 298 16	127,763.12
Tunnel Ridge,	Mahanoy City,	do. do. do.	3,458.17	74,654.15	70,008.02
East Bear Ridge, No. 1,	Mahanoy Plane,	Myers, McCreary & Co.,	64.004.19	63 196.17	65,491.06
West Bear Ridge, No. 2,	do.	do. do.	64,549.03	74.425.09	69,283.18
Packer, No. 1,	West Mahanoy township,	Lehigh Valley Coal Company,	71,530.14	81 564	61,700
Packer, No. 2,	do. do.	do. do.	126.224.15	126,510.19	98,434.02
Packer, No. 3,	do. do.	do. do.	79 661.18	170,078.11	158.595.10
Packer, No. 4,	do. do.	do. do.	178,713 07	200,682.07	218 127.19
Cambridge,	Shenandoah,	Cambridge Coal Company,	5.122	9,065.12	10,939
Cuyler,	Raven Run,	S. M. Heaton & Co.,	147 152	177,954.04	175,949.08
Copley,	Mahanoy City,	L. F. Lentz,	57.026.14	68,777.12	75,958
Draper,	Gilberton,	Draper Coal Company,	87,982.15	117,132.09	114,631.11
Glendon,	Mahanoy City,	J. C. Hayden & Co.,	89.506.29	95.481	111,436
Honeybrook, No. 1,	Audenried,	Lehigh and Wilkes-Barre Coal Company,	80,778.10	81,116.01	51,381.08
Honeybrook, No. 4,	do.	do. do.	110,712.04	164,940.07	163,580.62
Honeybrook, No. 5,	do.	do. do.	124,153.02	124,302.12	108.419.02
Kohinoor,	Shenandoah,	R. Heckseher & Co.,	159,813.14	175 861	162,000
Lawrence,	Gilberton,	J. S. Lawrence,	95,381 10	112.200	95,368
Primrose,	Mahanoy City,	Primrose Coal Company,	41,786.06	55,193.02	56,460
Stanton,	Gilberton,	Miller, Hoch & Co.,	62 803.10	57,854.05	68,733
Coal Run,	St. Nicholas,	Suffolk Coal Company,	93,292.03	127,400.04	136,191.12

Staffordshire,	do.	Jones & Oliver,	8,111.19	11,422.01	7,881.08
Kehley Run,	Shenandoah,	Thomas Coal Company,	80,032.02		79,616
William Penn,	West Mahanoy township,	William Penn Coal Company,	174.000	222,252.09	228.000
West Lehigh,	Mahanoy City,	Fisher Hazzard,	40,269.19	46,757.16	47,666.08
Webster,	do.	L. S. Baldwin,	15,167.04	24,119.11	25,381
Oakdale,	Shenandoah,	E. L. Powell,	3,896	10,000	10,000
Mammoth,	Mahanoy City,		156		
North Star,	do.	Reynolds & Roberts,	15,413.15	24,000	8,465.19
Laurel Ridge,		John A. Dutter,	19,583	11,016	24,104.09
Hill Side,			3,000		
Eureka,			6,576		
Total shipped to market,			3,543,663.04	4,249,643.08	4,401,894.06
Consumed or sold at colliery,			210,122.10	254,980.18	259,130.06
Total production,			3,753,785.14	4,504,624.06	4,661,024.12

NUMBER OF EMPLOYEES, COAL MINED, DAYS

COLLIERIES.	Operators.	NUMBER EMPLOYEES.		
		Outside.	Inside.	Total.
Girard,	Philadelphia and Reading Coal and Iron Company,	156	115	271
Hammond,	do. do.	129	127	256
Conner,	do. do.	116	176	292
Girard Mammoth,	do. do.	87	118	205
Turkey Run,	do. do.	147	212	359
West Shenandoah,	do. do.	173	168	341
Shenandoah City,	do. do.	137	204	341
Plank Ridge,	do. do.	119	197	316
Indian Ridge,	do. do.	212	276	488
Ellangowan,	do. do.	301	381	682
Knickerbocker,	do. do.	140	182	322
Gilberton,	do. do.	106	107	213
Boston Run,	do. do.	85	93	178
Bear Run,	do. do.	95	105	200
St. Nicholas,	do. do.	101	99	200
Tunnel Ridge,	do. do.	116	100	216
Elmwood,	do. do.	68	79	147
Mahanoy City,	do. do.	122	150	272
North Mahanoy,	do. do.	53	125	178
Schuylkill,	do. do.	98	139	237
Packer, No. 1,	Lehigh Valley Coal Company,	140	100	240
Packer, No. 2,	do. do.	172	208	380
Packer, No. 3,	do. do.	149	280	429
Packer, No. 4,	do. do.	180	261	441
Cuyler,	S. M. Heaton & Co.,	167	242	409
William Penn,	William Penn Coal Company,	260	340	600
Kohinoor,	R. Hecksher & Co.,	170	275	445
Kehley Run,	Thomas Coal Company,	116	135	251
Oak Dale,	E. L. Powel,	9	18	27
Cambridge,	Cambridge Coal Company,	11	21	32
Coal Run,	Suffolk Coal Company,	120	140	260
West Bear Ridge,	Myers, McCreary & Co.,	157	143	300
East Bear Ridge,	do. do.	82	127	209
Lawrence,	J. S. Lawrence,	166	127	293
Stanton,	Miller, Hock & Co.,	150	137	287
Laurel Ridge,	John A. Dutter,	26	31	57
Draper,	Oliver Disston,	126	173	299
Webster,	L. S. Baldwin,	25	25	50
North Star,	Reynolds, Roberts & Co.,	8	10	18
Staffordshire,	Jones & Oliver,	8	9	17
Glendon,	J. C. Haydon & Co.,	90	160	250
Coplay,	L. F. Lentz,	86	129	215
West Lehigh,	Fisher Hazard,	95	118	213
Primrose,	Primrose Coal Company,	72	80	152
Honeybrook, No. 1,	E. B. Leiseuring,	79	79	158
Honeybrook, No. 4,	do.	114	208	322
Honeybrook, No. 5,	do.	142	156	298
		5,481	6 885	12,361

WORKED, &c., FOR YEAR ENDING DECEMBER 31, 1882.

Days worked.	Kegs of powder used.	Number of mules and horses.	PERSONS KILLED.			PERSONS INJURED.			Tons of coal shipped.	Tons of coal used and sold at colliery.	Total tons of coal mined.
			Inside.	Outside.	Total.	Inside.	Outside.	Total.			
206.75	775	35	1		1	3		3	104 647.08	6 278.16	110 926.04
248	3,475	24				3	2	5	93 838.13	5,630.06	99,468.19
249	3,900	39	1		1	3	1	4	138,293.10	8,297.11	146,591.01
197.75	2,200	22				2	1	3	47,832.14	2 870.00	50,702.14
247	2,850	34	2		2	2	2	4	127 763.12	7,665.16	135,429.08
245.50	2,950	27	1	1	2	5	3	8	103,776.13	6,226.11	110,003.04
248.50	2,775	44	2		2	6	1	7	116,213.09	6 972.16	123,186.05
250	4,125	32	1		1	6	1	7	108,257.16	6,495.10	214,753.06
248.50	3,775	47	1	2	3	9	6	15	144,602.00	8,676.00	153 278.00
244 50	5,950	57				9	2	11	244,120.15	14.647.05	258,768.00
243.25	3,300	34	1		1	7	1	8	92,168.07	5,530.00	97,698.07
242.75	2,975	21				3		3	77,090.09	4,625.08	81,715.17
232.50	6,325	24				5		5	80,470.10	4,828.05	85,298.15
194.25	1,775	22				6		6	43,751.07	2,625.00	46,376.07
238.50	1,750	26				3	3	6	106,400.05	6,384.00	112,784.05
213.25	1,965	21		1	1	2		2	70,008.02	4 200.10	74,208.12
104	882	8		1	1	2		2	20,841.06	1,250.09	22 091.15
246	2,460	39	1		1	5	1	6	113 339.16	6,800.08	120,139.04
232.50	1,435	19	1		1	3	1	4	52 710.01	3,162.12	55,872.13
245.50	2,700	12	2		2	5		5	83 972.11	5,038.06	89,010.17
191.60	990	23	1		1	1		1	61,700.00	6,037.10	67,737.10
169.25	2,576	22		1	1	1		1	98,434.02	7,516.00	106,950.02
242.50	2,870	21	1		1				158,595.10	6,629.10	165,225.00
233 20	5 367	28	1		1	5		5	218,127.19	7,043.00	225,170.19
265.75	5,550	47	1		1	1		1	175,949.08	10,557.00	186,506.08
260 50	3,000	50	2		2	8		8	228,000.00	25,000.00	253,000.00
240.50	2 000	35	7		7	5		5	162,000.00	8,000.00	170,000.00
217.50	2 100	32	1		1				79,616.00	661.04	80 277.04
190	30	3							10,000 00	100.00	10,100.00
240	240	6							10,939.00	156.00	11,095.00
244.50	3,880	30	1		1	3		3	136,191.12	2,980.00	139,171.12
244.25	329	14	1		1	1		1	69,283.18	4,157.00	73,440.18
269	69	15				1	1	2	65,491.06	3,929 09	69,420.15
253	450	20	1		1		1	1	95,368.00	14.400.00	109,768.00
222.25	478	30							68,733.00	7,200.00	75,933.00
267	630	6							24 104.09	1,446 05	25,550.14
257.75	2,600	23				11		11	114,631.11	7,151.10	121,783.01
243	710	7							25 381.00	500.00	25.881.00
234	264	4							8,495.19	508.00	8,973.19
174 50	185	3							7,881.08	472.17	8,354.05
223.70	2,189	29	1		1		1	1	111.436.00	3,846.00	115,282.00
250	1.774	36	1		1	1		1	75,958.00	3,000.00	78,958.00
187	1,127	23	1		1	4		4	47,666.08	4,461.00	52,127.08
211.75	2 025	11				3	1	4	56 460.00	3,387.12	59,847.12
212.40	889	20				1		1	51,381.08	1,082.00	52,463.08
220.90	3,198	45				1	1	2	163 530.02	5.331.00	168,861.02
226.10	2,006	30					1	1	108,419.02	5,372.00	113,791.02
227.25	100,768	1,196	34	6	40	136	31	167	4 401,894.06	259,130.06	4,661,024.12

THIRD OR SHAMOKIN DISTRICT.

OFFICE OF INSPECTOR OF MINES, SHAMOKIN DISTRICT,
ASHLAND, *April 2, 1883.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

DEAR SIR: In compliance with an act of Assembly, entitled "An act providing for the health and safety of persons employed in and about the coal mines," approved March 3, 1870, I herewith have the honor of submitting this, my annual report of the proceedings, accidents, fatal and non-fatal, condition of workings, with tabulated statements of employés, tonnage, &c., for the year 1882:

Total quantity of coal shipped to market,	4,329,054.00
Consumed or sold at colliery,	259,745.04
Total production for year 1882,	4,588,799.04
Total production for year 1881,	4,432,601.13
Increase over that of the year 1881,	156,197.11
Number of employés inside,	7,847
Number of employés outside,	5,126
Total number of employés,	12,973
Number of kegs of powder used,	93,514
Average number of days worked during year,	$216\frac{3}{4}$
Number of fatal casualties,	44
Number of non-fatal casualties,	182
Total number of casualties,	226
Ratio of fatal accidents to total number of employés,	$294\frac{9}{11}$
Ratio of non-fatal accidents to total number employés,	$71\frac{3}{11}$
Ratio of fatal accidents to tons of coal produced,	104,290.89
Ratio of casualties to tons of coal produced,	20,304.42
Ratio of non-fatal casualties to tons of coal produced,	25,213.18

Two hundred and nine visits were made to collieries to examine their workings. Attended thirty-four inquests. Traveled, in performance of those duties, by rail, five thousand four hundred and twenty miles; in the mines, five hundred and fifty-one miles; on foot, outside, seven hundred and forty-seven miles.

In addition to tabulated statements of number of employés in and about the mines, number of tons of coal produced, number of kegs of powder used, and days worked during the year, I have given my views on ventilation, the benefits to be derived therefrom, accidents, their nature and causes, together with suggestions as to how many of them might have been avoided, and such other information as I deemed of importance to those engaged in the mining and production of coal.

Respectfully, your obedient servant,

JAMES RYAN.
Inspector.

GENERAL IMPROVEMENTS.

Short Mountain and Lykens Valley Colliery.

Built a new chute for conveyance of Bear Valley tunnel coal to breaker. Put in place a steam pump, thirty-six inches by thirty-six inches by six feet. Erected a new fourteen-foot fan, to assist in ventilating Short Mountain slope, west workings. Drove one hundred and seventy-five yards of a cross-cut tunnel in Bear Valley workings.

Greenback Colliery.

Sunk the slope a lift of seventy-three yards. Drove a tunnel south to Skidmore vein, one hundred and ten feet. About one thousand feet south from breaker, drove a tunnel from surface outside south-west to Buck Mountain vein.

Bellmore Colliery.

Built a temporary breaker, in order to extend the inside workings. A large new breaker under construction, and nearly completed.

Locust Gap Colliery.

Sunk a lift on slope of one hundred and twelve yards, in Mammoth vein. Put in place a set of new boilers.

Morris Ridge Colliery.

Sunk a lift on slope in Mammoth vein, and opened a new drift on the Buck Mountain seam.

Logan Colliery.

Built a new boiler-house; put in place four new boilers. Drove a tunnel yards, to Buck Mountain vein.

Hazel Dell.

Put up a double hoisting engine, -inch cylinder. Sunk part of a slope in Buck Mountain vein, and laid twelve hundred feet of steam-pipe.

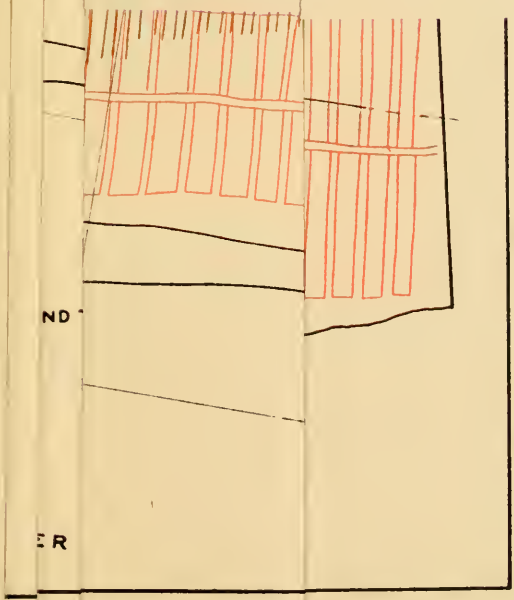
Summit Branch Colliery.

This colliery is located north of Williamstown, in Williams township, Dauphin county, on the lands of the Summit Branch Railroad Company, and by them operated. It was first opened under the firm name of the Bear Valley Coal Company, but the first coal shipments were made by the present company in 1866. The colliery, at present, consists of one tunnel level and five slope openings, viz: Tunnel level openings on the White's, three inside slopes on Big Lykens Valley, and two slopes sunk from surface on the No. 9, (a split of the Mammoth seam.) No. 2 slope is sunk three hundred and twenty-five yards from tunnel, in the Big Lykens Valley seam, on an angle of twenty-two degrees north dip. No. 3 slope is sunk, from same level, five hundred and thirty-five yards, in same vein, on an angle of twenty-five degrees north dip. About one hundred yards west of bottom of No. 3 slope, No. 4 slope is sunk two hundred and five yards deep, on an average angle of forty degrees, dipping north. No. 1 slope, on No. 9 seam, sunk one hundred and four yards, on an angle of forty-five degrees, dipping north. No. 2 slope, No. 9 seam, sunk one hundred and twenty-eight yards, on an angle of sixty degrees, dipping south. The seams and veins of coal worked are the Big and Little Lykens Valley, the White's, and No. 9. The Big Lykens Valley averages from eight to thirteen feet of solid red-ash coal; the Little Lykens Valley varies from four to five feet thick; the White's vein averages about four feet thick, of good strong coal. Those three veins are of a hard red-ash, of a superior free-burning coal, unexcelled for domestic use. The No. 9 vein is of a hard white-ash.

There are in use inside, about seventeen thousand eight hundred and ninety yards of mine track, mostly of thirty-five-pound rail; slopes mostly thirty-five-pound steel rail. Outside, about four thousand yards, or a total of nearly twelve and one half miles of track in use inside and outside.

There are in use about three hundred and twenty-five mine cars; capacity one hundred cubic feet. There are seven hoisting engines at slopes, viz: One at No. 2 slope, Lykens Valley, eighteen-inch cylinder, three-feet stroke, eight-feet drum; No. 3 slope, a pair of double engines, twenty-two-inch cylinders, four-feet stroke, two eighteen-feet drums; No. 4 slope, double engine, sixteen-inch cylinders, two and a half-feet stroke, ten-feet drum; No. 1 slope, No. 9 vein, one single hoisting engine, fifteen-inch cylinder, four-feet stroke, drum six feet six inches diameter; No. 2 slope, No. 9 vein, south dip, a pair of double hoisting engines, cylinders fourteen inches, three-feet stroke, eleven feet six inches diameter of drum.

Five fans are in use: One eighteen-foot fan, single engine, twelve-inch cylinder, three-foot stroke; one twelve-foot fan, single engine, fourteen-inch cylinder, two-foot stroke; one twelve-inch fan, single engine, fourteen-inch cylinder, two-foot stroke; one fourteen-foot fan, single engine, fourteen-inch cylinder, two-foot stroke; one fourteen-foot fan, single engine, fourteen-inch cylinder, two and a half-foot stroke.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Boilers.

There are sixty-nine boilers in use, varying in diameter from thirty to thirty-six inches, and in length from twenty-six to thirty feet, besides several small flue boilers at the different fresh water stations.

There are two brick flue-ways, two hundred and thirty yards in length, driven in the Little Lykens Valley vein, and one flue-way (new) driven in the White vein, seven hundred and sixty yards in length. In the construction of this there has been used one million and a half of bricks, the most of which has been manufactured by the company on their ground convenient to colliery. This is a solid brick arch with airways on each side to protect the coal from fire. A constant current of air is passing from the boiler-room up them at all times, thus cooling the coal up along the sides or ribs and ventilating the boiler-room. This flue-way crosses seven gangways by means of stone arches, and has been over two years in building.

Locomotives.

There are three in use: One on dirt bank and two bringing coal to breaker. The dirt bank engine weighs seven tons and the two others eleven tons each.

Pumps.

The drainage of the Lykens Valley vein is effected by seven steam pumps working on three lifts, viz: The first lift of two hundred and twenty-five yards is drained by three pumps:

No. 1, twenty-inch cylinder, four-foot stroke, ten inch pole; No. 2, twenty-two-inch cylinder, six-foot stroke, ten-inch pole; No. 3, twenty-five-inch cylinder, six-foot stroke, twelve-inch pole.

The next lift is three hundred and ten yards below the first with three pumps:

No. 1, twenty-five-inch cylinder, four-foot stroke, nine and a half-inch pole; No. 2, thirty-inch cylinder, six-foot stroke, ten-inch pole; No. 3, thirty-eight-inch cylinder, six-foot stroke, sixteen-inch pole.

The next lift has only one steam pump—twenty-two-inch cylinder, four-foot stroke, and eight-inch pole.

Slope on north dip, No. 9 vein, is drained by one steam pump—sixteen-inch cylinder, eighteen-inch stroke, eight-inch pole.

Slope on south dip, same vein, is drained by one steam pump—twenty-four-inch cylinder, twenty-inch stroke, and ten-inch pole.

Fresh water is furnished through a five-inch column from two pumping stations. The main pump is a Griscom pump, double-acting—eight-inch cylinder, two-foot stroke, and two four-inch poles. Auxilary pump at same place—ten-inch cylinder, four-foot stroke, five-inch pole.

Two double-acting air compressors furnish compressed air for driving some of the pumps, also for blacksmith fires inside.

There is connected with the colliery a large blacksmith, carpenter, and machine shop, also a saw-mill.

Table of coal shipped from colliery from beginning of operations to December 31, 1882:

Year.	*Tons.*
1866,	67,643.08
1867,	123,109.03
1868,	180,304.09
1869,	197,971.17
1870,	289,082.16
1871,	249,053.14
1872,	261,485.13
1873,	301,326.07
1874,	226,223.12
1875,	301,067.11
1876,	244,414.17
1877,	263,674.02
1878,	257,239.12
1879,	246,298.14
1880,	227,169.06
1881,	252,176.00
1882,	313,224.00
Total,	4,001,465.01

This does not include coal sold at breaker or coal consumed at mines.

	Tons.
The shipment of coal to market for year 1882,	313,224.00
Estimated local consumption,	25,058.00
Total production for year,	338,282.00

Being the largest production of any one colliery in my district for the year.

The general condition of the workings and machinery is excellent.

There were five lives lost during the year; one of these was outside on saw-mill, which can scarcely be attributed to the mining and preparation of coal, and six seriously injured during the year, a ratio of one life lost to 67,656.4 tons of coal produced, a ratio of one person injured to 56,380.33 tons of coal produced, a ratio of one life lost to one hundred and seventy-four employés, and a ratio of one serious injury to one hundred and forty-five employés.

The slate overlying the Lykens Valley seam, in portions of this mine, is of a very dangerous character, like that of West Brookside colliery, which requires more than ordinary care on the part of the workmen, together with the careful watch and supervision of those in charge of the inside workings of the mine, which it is very evident exists in the colliery, taking into consideration that only two of those fatal casualties were from falls; a third

by being caught between top of empty mine car and air-box across No. 9 slope, south dip; while riding up slope, and standing erect inside of car unmindful of the danger, he was caught between air-box and top of car, and fell down slope. The fourth was caused by an explosion of gas in a breast on the morning of July 17. According to the evidence of John W. Welsh, one of the men who opened and worked the breast up to the time of the explosion, said there was never any gas seen in it before. The fifth occurred outside at saw-mill, which, as I have previously stated in this report, can scarcely be attributed to the mining and preparation of coal. A map is hereto attached showing the extent of the inside openings of the White's, Big, and Little Lykens Valley *veins*.

The following is a list of the present officers: C. B. Rossell, Manager, office, Philadelphia; Holden Chester, General Superintendent, Shamokin; J. R. Fell, Superintendent, Williamstown; John R. Hoffman, Engineer, Shamokin; James Cox, Inside Boss, Williamstown; Albany Chester, Outside Boss, Williamstown.

Falls of Coal and Roof, &c.

ACCIDENT No. 1.—Thomas A. Williams, miner, age thirty-five years; fatally injured in Logan colliery, by a fall of slate, January 3, 1882. Died same evening.

Deceased and a man by the name of Thomas Gallagher were working in a breast together. About two o'clock in the afternoon they drilled and fired a blast; it did not work as well as they expected. They drilled another short hole about eighteen inches; this did not throw what was before it; it left a solid lump after it. On coming back into breast after firing, and on examination of the place, Gallagher told deceased that the slate was not safe. He, Williams, sounded it with the pick and said it was all right. He, deceased, commenced to cut out the lump of coal from under the slate, in a few seconds after being cut out the slate fell, and inflicted such injuries as to cause death the same evening. Deceased left a wife and two children.

ACCIDENT No. 2.—John Manning, miner, age forty-one years, who was crushed between a mine car and a lump of coal in Mt. Carmel shaft, on January 31, 1882, receiving injuries of such a nature as to cause his death in two and a half days after.

It appears that between the hours of ten and eleven o'clock, A. M., deceased and a man by the name of John Bradley were working together and loading a mine car. A lump of coal which was loose on pillar after a blast, fell and rolled down, jamming him between it and a car which he was loading at the time, receiving such injuries as to result in death in about two and a half days after accident.

ACCIDENT No. 3.—John T. Cahill, laborer, age fifteen years; injured severely by a fall of top slate in Enterprise colliery, on March 27, 1882. Died same evening.

Deceased was working with his father robbing out what was known as Foley's gangway. In the morning after going in to work they drilled and

fired two holes, after which the father commenced to load the outside car of two which they had in to load. After throwing five or six lumps in car, he lifted the door and put a drill under it so as to make it easy for the boy to load. Then the father went in to load a car that was inside of the one the boy was loading. He had not thrown more than one or two shovels full in, when he heard the fall outside. The piece of slate which fell was about two thousand pounds' weight.

ACCIDENT No. 4.—John Miller, miner, age twenty-three years; killed in Enterprise colliery, by a fall of top rock, (fire clay,) on May 12, 1882. Leaves a wife and three children.

Shortly after going in to work in the morning, deceased commenced to drill a hole in what was known as the blasting bench, while his partner was putting a cotton in his lamp and breaking a couple of lumps of coal in chute. He, Miller, had the hole in about three feet when the empty trip of mine cars came. They loaded two cars, after which George W. Ebey, his butty, made up the powder. Deceased drilled the hole in about four feet. They charged, tamped, and fired it. Shortly after firing it they went back and dressed off loose coal. In about ten minutes after, the piece of top rock fell on deceased, killing him instantly.

ACCIDENT No. 5.—Richard Fitzpatrick, miner, age thirty years; killed by a fall of top rock, in Summit Branch colliery, on May 13, 1882. Left a wife after him.

Deceased was working in a breast with another man, by the name of Thomas Berry. After going in to work on morning of accident, they discovered the top rock to be in a dangerous condition. Deceased was making preparations to prop it, when, without giving any warning by cracking or working, it fell on deceased, inflicting injuries of such a character as to cause his death same day.

ACCIDENT No. 6.—John O'Brien, laborer, age twenty-three years; killed in Summit Branch colliery, by a fall of top slate, May 26, 1882.

By the evidence taken at the inquest, the deceased was working in a breast with a miner by the name of Patrick Fagan, and another laborer by the name of George Close. They were working by night. The accident occurred about half an hour after commencing work in the evening. James Morgan, the miner working that week by day, told Fagan there was a bad piece of top slate, and told him to be careful. Accordingly, after going in to work in the evening, Fagan sounded it with a pick, and considered it safe. O'Brien, at time of accident, was barring another piece of slate. He was a single man.

ACCIDENT No. 7.—Ferdinand Rinehart, miner, age forty-eight years; killed in Excelsior colliery, by a fall of coal and slate, on June 6. Leaves a wife and five children.

Deceased was driving a gangway in the north dip drift, and had been working alone about five or six days previous to the day of accident. Jacob Flemming and Albert Martz testified, at inquest, to their speaking

to him at half past eight or nine o'clock, and at ten o'clock, in the forenoon. The next they saw of him was about three or half past three o'clock in the afternoon, under the fall of slate and coal, dead.

This is one of the many accidents which might have been avoided had that care and prudence been exercised which should have been, by timbering and making the place secure as the work progressed.

Accident No. 8.—Patrick Quinn, miner, age thirty-eight years; injured seriously on body and head, by a fall of coal, in North Ashland colliery, on June 15. Died in about three hours after the accident. He left a wife and five children.

Deceased was working with a man by the name of Patrick Conway, skipping the pillar between Nos. 48 and 49 breasts of the lower west gangway. Shortly before the accident occurred, they had concluded to go home. Deceased took the rake, and went up the chute to rake in some coal. Conway followed. He had not been raking in long, when, without giving any timely notice, the piece of top coal fell, inflicting such injuries as to cause the death of Quinn in about three hours after.

Accident No. 9.—George Harper and William Robinson, miners, ages 28 and 44 years; killed by a fall of slate and coal, in Excelsior colliery, on July 12. Harper left a wife and four children; Robinson, one child.

Deceased and a man by the name of James Nairns were driving a trial hole in from new slope bottom, to prove the basin. At time of accident, they were blasting down some top slate and coal, enlarging the hole, preparatory to laying a road to use a mine car to run the stuff which would be worked in the driving of the hole out to bottom of slope. According to the evidence produced at inquest, they were working at night, and had gone in to work about six o'clock in the afternoon. Harper had the work by contract. Robinson and Nairns were working for him for day's wages.

After going in to work in the evening, they cut out four props, which had been set some time previous under the slate; after which they fired a blast and loaded a car of coal. Harper drilled a second hole, while Robinson and Nairns were loading a car of slate. After the car was loaded, they fired the second blast; it did not work satisfactorily; it worked up into the No. 9 vein, which was over the slate. They charged, tamped, and fired it a second time, with the same result as the first. Again they charged it a third time, and put in two sticks of dualin. It blew down the slate, after which they barred down all loose slate and coal with a drill, and commenced to load a third car. They were loading it about ten minutes, when the fall took place, burying the three under it, killing Harper and Robinson. Robinson had his leg broken, besides receiving other bodily injuries.

Accident No. 10.—John Sheridan, miner, age thirty-three years, killed by a fall of top coal in Mt. Carmal shaft, August 1. Left a wife and five children.

Deceased was working with a man by the name of Benjamin Hepler in breast No. 19 of No. 3 slant main-east gangway. They were after loading

the second car. Hepler drilled a hole and fired it while deceased was breaking some coal in chute preparatory to loading the third car, after which they drilled a hole each. Deceased on outside and Hepler on inside rib. They fired Hepler's first then went in cross-heading next to face of breast for a short time, both left the heading together. Deceased went up to face of breast, Hepler went down to next cross-heading to where the powder was to make a cartridge of powder for the hole that Sheridan had drilled. He (Hepler) had not been in the heading long before he heard a fall at face of breast. Hepler called out, "Are you all right;" to which he got no answer. He then went out of the heading up the breast. When up at cross-heading, next face of breast, he heard deceased breathe lightly. Hepler called to the men working in next breast. They carried him a short distance down to a platform at gangway when he died. The lump of coal that fell was about one and three fourths tons' weight.

ACCIDENT No. 11.—Stanislau Pulaski, miner, age thirty-eight years, injured severly by a fall of top coal and bone in Pennsylvania colliery on August 28. Died on September 4. Left a wife, no children.

Deceased and another Polander by the name Stephen Kelowskie were working together in breast No. 7 of the inside slope, west gangway, at time of the accident. By the evidence it appears these two men commenced in said No. 7 breast on August 3. From that time to the day of accident their attention was called frequently to the dangerous mode they were adopting in the working of their place. In working under dangerous overhanging coal they neglected to keep the roof properly propped and timbered. In my examination of the place after the accident, and previous to any other person commencing work in it, I found the general condition of the place to be of a dangerous character in not being worked in a safe, skillful manner. The upper bench of coal drawn so as to admit of a person putting their hand between it and main top for a distance of twelve feet across the breast. No props under top slate for a distance of fourteen yards down the breast from face.

ACCIDENT No. 12.—Nicholas Krell, miner, age thirty-six years, killed by a fall of top slate in Locust Spring colliery, September 7. Left a wife and two children.

Deceased on night of accident was working in a sump gangway on turnout east of bottom of slope. By the evidence elicited at inquest the attention of the deceased, it appeared, was called to the dangerous condition of the slate by James Harvey and Andrew Long, to which he (Krell) replied that it would not fall. In about three minutes after it fell and killed him.

ACCIDENT No. 13.—John Nye, miner, aged fifty-three years, killed in Burnside colliery, September 21, by a fall of slate. Left a wife and five children.

Deceased and a man by the name of Jonathan H. Dressler were working together driving a cross-heading at time of accident from one breast to another across a pillar. They had fired a blast to widen out the heading.

Dressler went down the breast about forty feet for an ax to make a wedge to tighten some timber. Deceased went into heading and commenced dressing off some loose stuff with a pick, when the lump of slate fell on and killed him instantly.

Accident No. 14.—Charles H. Hummel, laborer, age twenty-four years; killed by a fall of top slate and coal, in West Brookdale colliery, October 5. He left a wife.

Deceased, at time of accident, was working as laborer with two miners named Amos Zimmerman and George Wagner, starting a new breast off gangway. According to the evidence taken at inquest, Zimmerman and Wagner had neglected to keep the place safe by neglecting to bar or blast down all dangerous overhanging coal and slate, thereby endangering their lives and that of those entrusted to their care. Previous to accident, on two occasions the inside foreman called their attention to the careless and reckless manner they were working their place. On the same night, prior to accident, the top slate and coal were cracking and working; they went out a short distance and sat on gangway, expecting it to fall. Shortly after the driver brought in an empty car; they went in; Wagner and Hummel commenced to load it; Zimmerman started to drill a hole. They were not working long before the whole mass of coal and slate fell and killed Hummel.

Accident No. 15.—John McNulty, miner, age twenty-two years; killed in Logan colliery, by a fall of top coal, November 21. Single man.

McNulty and another man by the name of John Haffey, were working in breast No. 21, lower east gangway. About four o'clock in the afternoon, after firing a blast in the top coal, Haffey had dressed off all loose coal after shot or blast; they concluded the place safe. Deceased was putting loose coal into chute. Without giving any notice whatever, a fall of top coal, about eleven tons, fell on deceased, burying him under it and killing him instantly.

Accident No. 16.—John Flemming, miner, age twenty-two years; killed by a fall of coal, in Black Diamond colliery, November 23. He was a single man.

Deceased and his butty, James Nolan, had drilled two holes, one each. They had Flemming's tamped, and were near finished tamping Nolan's. He, deceased, was putting the blasting needle away, when a piece of coal, about half a ton's weight, which was over where they were tamping the last hole, fell on his neck and shoulder, jamming him against manway prop and breaking his neck.

Accident No. 17.—William H. Armstrong, miner, age twenty-six years; killed in Big Mountain colliery, on November 25, by a fall of top slate. He left a wife, no children.

At time of accident deceased was driving a chute near face of No. 9 vein gangway, No. 4 (straight) drift. He had the chute driven up the pitch from gangway fourteen feet with only two props set, about five or six feet

from gangway. A roll of rock in the top, which he neglected to take down or timber, fell on and killed him.

ACCIDENT No. 18.—David Foley, miner, age twenty-four years; killed by a fall of top coal, in Mt. Carmel shaft, on December 2. Leaves a wife, no children.

Deceased and another young man by the name of John Haffey, were working at robbing the top coal of a finished breast, which had been propped up in the working of it. Deceased, at time of accident, was in the act of punching the coal out from under a prop with a drill; a mass of coal which the prop was supporting fell, and killed him instantly.

ACCIDENT No. 19.—Levi Stahl, miner, age thirty years; killed in West Brookside colliery, by a fall of coal, on December 15.

Deceased and a man by the name of Owen Langton were robbing pillars. Previous to accident they had been talking and joking with each other. The driver brought them a car to load. Stahl got between the car and pillar, and commenced to shovel coal into car. Langton advised him to get out of that place, that was too dangerous on account of the loose coal on side of pillar might fall on him, the space between pillar and car being only about two feet. Stahl did not comply with the request. Langton told him a second time with the same result. Langton stooped down for a shovelfull of coal; he heard the fall; he cried out, "Levi, are you hurt?" got no answer. Langton ran around the car to where Stahl lay dead. The lump had struck him and knocked his head against the car, completely mashing it in, so that the blood and brain ran out when Langton picked him up. He was a single man.

ACCIDENT No. 20.—James Johnson, laborer, age thirty-two years; killed in Excelsior colliery, by a fall of top coal, on December 23.

Deceased was laboring with a miner named Henry Derrick robbing pillars. On morning of accident, after going in to work, Derrick sounded the top and considered it all safe. They had three buggies or small cars loaded, and were loading the fourth, when, without giving any notice, the fall occurred, and killed him instantly. He was a single man.

Fatal Accidents by Mine Cars and Machinery.

ACCIDENT No. 1.—Peter D. Ebey, miner, age forty-two years; killed by being caught between top of car and gangway collar, while riding out Short Mountain west gangway on loaded mine car, on January 3. Left a wife and six children.

On morning of accident, deceased went in to work. His butties did not come to work that morning; he decided to go home for that day. When out as far as middle turnout, he jumped on the front bumper of the first car of a loaded trip, which was starting off out to slope. When passing out at point on gangway where timbers are low, the driver (William Bitterman) told him to keep down. Presently his head was caught between top of car and gangway collar. When found, he was lying across the track, dead, under the front axle of the first car, about twenty feet outside of point where he was caught.

Accident No. 2.—William Yost, outside laborer, age fifty-five years; injured severely about the body, by being jammed between a mine car and side wall of No. 9 slope-house, Cameron colliery, on February 2. Died in about five hours after accident. He left a wife and three (married) children.

Deceased was in the act of pushing a car loaded with timber to an empty car which was near by. Two loaded cars were being hoisted up the slope, and when they were running from top of slope over towards tip at breaker, when nearly opposite the car that deceased was pushing, the front loaded car jumped the track, and ran across against the car he was pushing, jamming him against the side wall of slope-house, inflicting such injuries as to cause his death.

Accident No. 3.—Simon Frederick, miner, age forty-eight years; killed by being caught between top of empty mine car and return air-box, while riding up Summit slope of Summit Branch colliery, on March 23. He left a wife and five children.

On the morning of March 23, between four and five o'clock, after working all night, James Tate, Charles Messersmith, Charles Procaskie, and deceased, were riding up slope in an empty mine car, on their way going home. When up slope, and passing a point where return air-box crosses slope, deceased was caught between top of car and air-box, and drawn back over top of car, and fell down slope, and was killed.

Accident No. 4.—Martin Kinaskie, driver, age eighteen years, who was seriously injured about head and body, by being crushed between loaded mine cars, in Luke Fidler colliery, on March 18, died on the 24th.

By the evidence, deceased and another young man, by the name of John Thompson, were hitching on empty and unhitching loaded cars at foot of a gravity plane, in No. 9 vein, east of shaft about 1,065 yards. The first car of a loaded trip was standing on turnout west of foot of plane; a second one was near, not quite bumped up to it. When the third loaded car was run down the plane, Thompson hitched a mule, and pulled it out quick, and bumped it out against the second, intending to have both run out as far as the first, which was not accomplished. Deceased got behind the second, to push it out the first. There being somewhat of a grade on the turnout, the third followed, without his taking notice, and caught his head between the top rails of both cars, causing a fracture of the skull, from which he died in six days after receiving the injury.

Accident No. 5.—William Thomas Jefferson, doortender, age thirteen years, injured in Mt. Carmel shaft by being jammed between empty mine cars and door on April 17. Died on the 19th.

Deceased was attending door in lower main east gangway. He was standing at his door keeping it open while an empty trip of mine cars were being hauled in the gangway. While the trip was passing by, he stood against the door looking in towards the front car. The hind car jumped the track at Center casting, about sixteen feet outside of door. He did not take notice until it jammed him against the door, fracturing his skull, which caused his death in two days after the accident.

ACCIDENT No. 6.—Andrew Powick, laborer, aged nineteen years, injured in Morris Run colliery, on July 13, by being jammed between loaded mine cars and low side of gangway. Died on the 24th.

The subject of this was coming out along the east gangway; when near bottom of slope a loaded trip of cars were being hauled from west to east side across the bottom of slope. Deceased being not well acquainted with the inside of a colliery, got on the low side, while there was plenty of room on high side of gangway. The loaded cars caught him against the timber, causing a fracture of the skull, from which he died in eleven days after.

ACCIDENT No. 7.—John G. Charleston, miner, age forty-three years, killed at face of Back Switch tunnel, near bottom of inside slope, Luke Fidler colliery, on August 2, by being struck by a loaded mine car running back down slope, caused by the wire rope breaking. He left a wife and three children.

At time of accident deceased and another man by the name of Edward Munshall were driving a Back Switch tunnel south from bottom of slope. According to the evidence of Thomas Golden (engineer) the bottom men rang for him to hoist, rang again to stop, rang a third time to hoist. He started the engine; it went around half a stroke when the wire rope tore apart, allowing the loaded car to run back in tunnel, striking deceased and killing him instantly.

ACCIDENT No. 8.—Joseph J. Ramsey, doortender, age fourteen years, seriously injured in Mt. Carmel colliery on August 10. Died on 13th.

Deceased and four or five other boys went up the slope outside at dinner time. When he came down again at one o'clock he was in the dark, (his lamp being quenched,) the bottom men were pushing the first empty car that had been left down slope after dinner time on turnout from bottom of slope. They hollowed to him to keep out of the way of the loaded car that was being run out to bottom of slope. Unmindful of the advice given, and of his own safety, he continued on towards the loaded car, which struck him at Center casting and knocked him down. When found he was partly under, between the west side wheels of car. He received injuries of such a character as proved fatal in three days afterwards.

ACCIDENT No. 9.—Robert Snyder, slate-picker, age sixteen years, injured on September 2 at Short Mountain and Lykens Valley colliery. Died on 5th.

Deceased was bringing a bucket of water for the breaker hands. When near saw-mill, between the breaker and Bear Valley tunnel he attempted to jump on locomotive, which was hauling a trip of loaded cars from Lykens Valley slope to breaker. In doing so he missed his step, thereby falling in front of locomotive wheels. He was dragged from twenty-five to thirty yards, receiving such injuries as caused his death on the above-mentioned date.

ACCIDENT No. 10.—Richard Simmons, laborer, age sixteen years, injured about head and body by being jammed at bottom of west inside slope, Cameron colliery, between a loaded mine car and prop, on September 6. Died same evening.

There were two men named Charles McCullum, William Guck, and this boy (Simmons) employed at bottom of slope, McCullum taking off the empty and putting on the loaded cars. Deceased drove a mule and pulled the bell-wire, (the signal to hoist.) It appeared that, after the signal to hoist was given, the engineer in taking up the slack rope at bottom of slope, the loaded car started in towards bottom and was going back again. The engineer, hoisting at the same time, caused a sudden jerk to the car, which lifted it to one side off track, thereby jamming deceased in such a manner as to cause his death the same evening.

Accident No. 11.—William Gerraghty, laborer, age nineteen years, killed at bottom of North Ashland colliery slope by being crushed between a loaded mine car and prop, on October 17.

It appeared that, for some time previous to accident, an understanding had been between the bottom men, top men, and hoisting engineer that it was unnecessary for the bottom men to ring the bell to hoist, as there was always plenty of coal at bottom, whenever they were ready on top, the engineer could hoist. If it ever occurred that there was no coal, or something wrong, at bottom they would make it known by the speaking-tube or signal. On day of accident, deceased, in his first attempt, as the loaded car was being run in off turnout to bottom of slope, missed hooking on his side of spreader-chain on car. The engineer had commenced to hoist, and was taking up the slack rope and chain. Deceased made a second attempt, but failed to put the chain on. The car jumped or was pulled across the track crushing him to death against a prop at bottom of slope.

Accident No. 12.—Patrick Conway, driver, age eighteen years, seriously injured by being crushed between mine car and tunnel in Preston, No. 2, colliery on November 14. Died in about ten hours after receiving injuries.

On morning of accident deceased took in five empty cars, with his mules, in the Mammoth vein west gangway as far as the Primrose vein tunnel. At that point there were two unhitched. He started in the tunnel with the other three. When in a short distance he was told by a boy, who was ahead of him, that there was a car in the tunnel, and to mind himself. Deceased stepped on high side of tunnel off the front bumper of first car, which he was taking in. There being insufficient room for him, the cars crushed him against side of tunnel, inflicting such injuries as proved fatal.

Accident No. 13.—Michael Ryan, bottom-man, age sixteen years; killed by being crushed between loaded mine cars at bottom of slope of Pennsylvania colliery, on November 20.

Deceased, with three others, was employed as bottom-men. At time of accident, the engineer was signalled to hoist and had the first of the two cars that was being hoisted on the pitch. Deceased was in the act of uncoupling a center hitching chain that was being used in hauling them out the gangway to bottom of slope. In his attempt to unhook it the cars were some short distance apart, but while doing so, the hind or last car started and bumped against the front one, which was on the pitch, bringing the

bodies or boxes of the cars in close proximity to each other, crushing his head and killing him instantly.

Fatal Accidents by Explosions of Carbureted Hydrogen Gas.

ACCIDENT No. 1.—James Lawrence, miner, age fifty-one years; killed by a concussion of air from an explosion of CH. gas, in Buck Ridge colliery, on May 20. He left a wife. David Green, miner, age twenty-three years; severely burned on head, face, neck, hands, arms, and body by same explosion of gas. He died in about forty hours after being burned. He was a single man.

By the evidence taken at inquest, John W. Metz, (fire boss,) on morning of explosion, made an examination of the working previous to the men entering the mine. He found all clear, with the exception of one chute which he found presence of gas in. He commenced to turn a small portable fan used by the chute men to remove it. Failing to remove it, he went through the breast, found all right, and put his mark, with chalk, (the day of the month) on the liners or boards next to face of breast which are used to circulate the air current to face of working places. After having made the examination, he went out to bottom of slope to tally-board, put his (a cross) mark under the number of the chute, indicating presence of gas. Robert James and James Tucket, chute-men, testified to having told Lawrence, Hoffman, and Green not to go up in their places until they (the chute-men) would have the gas removed out of their chute. According to the evidence of both men, they understood Hoffman to say to hell with it. Green said he would not go above the second cross-heading. Green and Hoffman were seen going through the battery man-hole door with naked lights. In three or four minutes after going through the door the explosion took place, the concussion of which killed Lawrence instantly and burned both Green and Hoffman fearfully. Green died shortly after.

ACCIDENT No. 2.—Patrick Tynan, miner, aged forty-five years, who was seriously injured by being burned by CH. gas, in Summit Branch colliery, on July 17, died on the 28th. Deceased and another man by the name of John W. Welsh, were working in breast No. 29, west counter of No. 4 slope. This accident took place early in the morning; they were on their way up the breast when they met some gas unexpectedly, that had accumulated during the night, and exploded it burning both, and inflicting such injuries on deceased as to cause his death. Welsh testified to having driven the chute, opened and worked in the breast all the time which was between four and five weeks, and had never seen any gas in it before.

Fatal Accidents by Explosions of Powder.

ACCIDENT No. 1.—Joseph Coujaskie, laborer, age seventeen years, severely burned by an explosion of powder in Burnside colliery, on February 2, died shortly after. Michael Coujaskie, (his father,) testified as follows: We were at the box, making a cartridge of powder. After I had the cartridge filled, Joseph commenced to gather some powder that had spilled,

and while doing so a spark from his lamp fell into the can igniting what powder was in it, and part of a keg full that was near by, inflicting injuries of such a character as to cause his death.

Accident No. 2.—John D. Meck, miner, aged twenty-three years, severely burned by an explosion of powder in Reliance colliery, on April 18, died on 28th. This accident occurred similar to that of Coujaskie. It appeared deceased was filling a cartridge with the lamp burning in his hat on his head. While doing so, a spark from it fell into a keg of powder, igniting it, and burning him fearfully. He died in ten days after receiving injury.

Miscellaneous Underground.

Accident No. 1.—Samuel Smith, boss loader, aged thirty-seven years. Killed in Centralia colliery, by falling down air-way and temporary traveling way, on April 12. Left a wife and four children. Deceased was employed as boss loader in west counter gangway. On forenoon of day of accident, he told a man by the name of John McElhenny, that he wanted to go down to the lower gangway to tell Edward Williams (inside boss) that he (Smith) was getting short of coal in counter. McElhenny told him he did not need to go down, that he (McElhenny) would go out to slope, and write down on car for Williams to come up. It appeared that Williams did not come up quick enough. Smith started to go down air-way to lower gangway to see him. When found about two o'clock, P. M., he was down near lower gangway, lying dead across the air-way against a pole that was laying on bottom slate across the air-way.

Accident No. 2.—Nicholas Schwade, miner, age thirty-seven years, killed by a rush of coal, slate, and rock in Locust Gap colliery, September 29. Left a wife and four children.

By the evidence elicited at inquest, deceased and another man by the name of John Linenbach were robbing pillars in No. 9 vein, west gangway. On day of accident they were engaged drawing out some loose coal that had been left in breast No. 46. After going in to work in the morning they loaded three cars. After loading the cars both men went up, Linenbach to first cross-heading, deceased went up the manway about thirty yards to a point where the loose stuff in breast was blocked. He took a hatchet up along with him to chop out some slabs or planks that were on the manway, which prevented the coal from running into and down it. While in the act of chopping, the loose stuff in breast started and rushed with such force as to break in the manway on him, thereby killing him instantly.

Miscellaneous Overground.

Accident No. 1.—Martin Kane, outside laborer, age sixty-five years, smothered under coal dirt at Locust Run colliery on January 5. He left a wife after him.

At time of accident deceased and a man by the name of Philip Gimble

were employed loading, hauling, and unloading coal dirt from dirt bank to slope engine boiler-house—the dirt to be used for firing under boilers About four o'clock, P. M., while they were loadidg a car of dirt at bank, it gave a rush or fall, covering deceased. In about ten minutes after, when found, he was dead.

ACCIDENT No. 2.—Henry Messersmith, outside laborer at saw-mill, age twenty-five years, killed at Summit Branch colliery, on Agust 15, by being struck with a board thrown by circular saw. He left a wife.

At about four o'clock in the afternoon, Charles Swayer, George Griner, and deceased were working in saw-mill outside at colliery. They had the four slabs taken off a twelve-foot log. While running the carriage back past the saw the board was pulled off the log by Griner, (slab carrier,) the log and board not being back past the saw quite far enough. The teeth of which caught one end of the board, lifted it over and threw it a distance of twenty-one feet to where Messersmith was standing, striking him between right hip and short rib, about eleven inches of one end going clear through his body. He died in about half an hour afterwards.

ACCIDENT No. 3.—Louis M. Jones, engineer, age sixty years, seriously scalded by hot water and steam from exhaust pipe of bull engine at Tunnel colliery on July 31. He died on August 18.

By the evidence adduced at inquest, deceased had been informed by John D. Goudge that the water down in the slope was raising. He (Jones) said that he was running as fast as the engine or pump would permit with safety, (there was only the west pump working at the time.) He said he would start the east pump a few strokes, which he did, and started the engine on full stroke. There being condensed water in the cylinder, the exhaust steam pipe burst. The hot water and steam scalded him fearfully, which caused his death on the above-mentioned date.

Falls of Coal and Roof.

There were twenty lives lost, from the above causes, out of a total of forty-four, being forty-five and a half per cent. of the whole number of fatal accidents for the year. The number of fatal accidents of this class for the year 1881 was twenty-one, out of a total of forty-eight, making forty-three and three fourths per cent. of the total fatal casualties for that year, or a gain of one and three fourths per cent. over that of the year 1881.

The number of non-fatal casualties from the same source was forty-five, out of a total of one hundred and eighty-two, being over twenty-four per cent. of the entire casualties for the year 1882. The number of non-fatal casualties of this class for the year 1881 was thirty-seven, out of a total of one hundred and forty-seven, being a little over twenty-five per cent. of the entire casualties for that year, a reduction of about one per cent. in the non-fatal casualties of this class from the year 1881, showing a gain of about three fourths per cent. in the entire casualties of this class for the year over that of the year previous.

In scanning the evidence taken at the several inquests, I find that at least forty per cent. of the total casualties of this class could have been avoided had that care and prudence been exercised which should have been. In some cases brought to our attention while attending those inquests, and making examinations after accidents, those in charge, as well as the workingmen, were negligent in the duties required of them to be performed in making regular and careful examinations of the working places, to see and compel the workmen or miners to keep their places safe by timely propping and timbering bad and unsafe roof, barring or blasting down all overhanging dangerous coal and slate. It is sad in the extreme to behold penniless and helpless little children deprived of the fostering care of a father to provide for their comfort and welfare until having arrived at the age of maturity.

In the case of Charles H. Hummel, laborer, who was killed in West Brookside colliery, while working with Amos Zimmerman and George Wagner, miners, the inside foreman, Henry Neithamer, on two occasions previous to accident, called their (Zimmerman's and Wagner's) attention to the dangerous condition of their place by their neglecting to bar or blast down overhanging dangerous slate and top coal. Unmindful of the advice given, they continued to work under it until it fell, with the above result.

In the case of Stanislau Pulaskie, who died from injuries received in Pennsylvania colliery by a fall of top coal and bone. In my examination of him and his partner, together with the condition of the place they were working in, evidently showed that the accident was the result of negligence, caused by they being impracticable miners. Did not realize or understand the danger they were undergoing in assuming the responsibilities incident to the mining of coal. Prior to the accident they had been reprimanded several times by one of the inside foremen, as to the dangerous condition of the place.

Much has been written by the several inspectors, since the enactment of the ventilation law, on this class of accidents, their several causes, the means by which they could be avoided or prevented, workingmen and those in charge being advised or counseled with on the urgent necessity of greater care and watchfulness being exercised or put in practice to diminish this prolific source of accidents. The loose discipline in many of the mines is attributable, in a great measure, for many of those accidents. The men in charge of the mine neglecting to make regular examinations of the workings, employing and permitting incompetent, impracticable men, as miners, to take charge of working places and the mining of coal. Those are some of the real or true causes of so many men being killed or maimed by falls. Until inside bosses exercise or become more rigid in the employment of men to mine coal, together with the discipline of the mine in compelling them to keep themselves secure by timely timbering and propping their places, as well as the barring or blasting down of all overhanging dangerous coal and slate, the present state of things in reference to this class of accidents will continue to exist.

Explosions of Carbureted Hydrogen Gas.

There were seventeen explosions of carbureted hydrogen gas in this district during the year 1882, by which three men were fatally, and twenty-six non-fatally injured. Some of the non-fatal were of a very slight character. This is a decrease of our fatal, but an increase of two non-fatal, compared with the year 1881. This prolific source of accidents, their causes, how they could be averted or avoided, have been so ably and exhaustively treated and commented on, in previous annual reports of the former and present mine inspectors, that very little remains to be said at present on the subject. It is very disagreeable year after year to be compelled to adversely criticise the acts of those, some of whom have left us, and passed away to that world beyond the grave. However, we consider it incumbent upon us as a duty we owe the present and future workers in the mines, hoping it will have the desired effect of diminishing the number of casualties coming under this head. A large percentage of those accidents are, beyond a doubt, attributable to carelessness, recklessness, and neglect. By a limited amount of care and prudence, their occurrence could have been avoided or prevented. The explosion of gas in the Black Diamond colliery, on the morning of March 6, by which five men were burned, the inside boss included, was the result of inexcusable carelessness, and neglect of the duties to be rendered or performed in having an examination of those parts of the colliery generating explosive gas in the morning before the miners enter the coal mine, and the cause of danger removed before such entrance being made or allowed to be made. Had this been done, the accident or explosion would not have occurred. On morning of accident, Isaac Lewis and Alexander Latsha went into the works in breast No. 11, on west gangway. Lewis got a safety lamp, went up into breast, but before going as far as the face, he di covered the gas exploding in the lamp. He came down, and sent Latsha out to the bottom of the slope to tell John T. Jones (the boss) to come in, that there was gas in their breast. Jones and the bottom man named Samuel Clements, came in with Latsha. While Jones and Lewis were putting in a stopping at bottom of breast to force the air-current up the inside, and down the outside manway to clear the gas out of breast, a man by the name of Thomas Parry, not knowing what danger he was approaching, came in along the lower cross-heading to where Jones and Lewis were putting in the stopping. Jones told him to go back, which he did, and was out at breast No. 9, where he was working. The traveling gas which was being removed, ignited on the naked lamp in his hat on his head, burning him severely, and exploded in along to where it was being removed, burning Jones, Lewis, Latsha, and Clements. Had Jones, before he commenced to remove the gas, gone through the breasts or sent one of the other men to tell the men go down on the gangway to a place of safety until the gas was removed, and the placesmade safe, this accident would not have occurred.

The explosion at Cameron colliery, on May 30, by which William Deib-

ler and Jesse Fuller were burned, was the result of gross negligence, carelessness, and recklessness on the part of both the fire-boss and men. On morning of explosion, Deibler and Fuller, with others, were waiting outside, at end of tunnel south from bottom of No. 9 slope to No. 10 vein, for the fire-boss to return after making an examination of the workings. On returning, he told Deibler and Fuller he was not in their places. Regardless or unmindful of their danger, they went in and up into breast with naked lights, igniting the gas, which burned both of them. In my investigation of this accident, I learned that very often the examination of some of the workings was neglected by the fire-boss in the mornings.

The explosion at same colliery, on September 21, which burned a man by the name of Joel Paul, occurred under circumstances similar to that on May 30. On morning of accident, Paul, with other men, was waiting outside, at a place known as the curve, on west gangway of No. 10 vein, in No. 9 slope. The fire-boss, after making an examination of the workings, came out to where the men were waiting. He told Paul that he was not in his breast that morning. Paul went into work; left his safety-lamp in the first cross-heading, about twenty-five or thirty yards down from face of breast, and went on up; when within three or four feet of face, the naked light which he had with him fired the gas and burned him.

Another explosion of carbureted hydrogen gas, in Luke Fidler colliery, on August 28, burned a young man by the name of Henry Boyd. The young man was working with his father, in a new breast, on the west gangway of the upper lift of inside slope. After going in to work in the morning, he commenced to load a car that was at his chute. He was not working more than a couple of minutes, when some gas, which had accumulated at face of chute, was brought down on his naked light by the working of the shovel which he was using, burning him on face, neck, arms, and hands. In a day or two after accident, I visited the colliery and saw the place where the explosion occurred. On inquiring into the particulars of the case, as to how it happened, I was informed the practice in vogue in that part of the colliery, in reference to the examination and the removal of gas out of the working places in the mornings, was, the fire-boss made the examination; any place he discovered gas in, he told the men working in it, that there was gas in their place—to be careful. Brown removed the gas out of his place into Jones', Jones removed it out of his place into Smith's, and so on. I called the attention of the parties having charge of the colliery, that if this practice was not discontinued, I would be compelled to enter a prosecution forthwith. The latter part of the eighth section of the ventilation act says: "He, (meaning the inside-boss,) or his assistants, shall examine carefully the workings of all mines generating explosive gases, every morning, before the miners enter the coal mine or colliery, and shall ascertain that the mine is free from danger, and the workmen shall not enter the mine until such examination is made and reported, and the cause of danger, if any exist, be removed."

The explosion at Big Mountain colliery, on September 21, which burned Adam Wehry severely on face, neck, arms, and hands, in breast No. 3 east, No. 8 vein, in the morning, on his way in from bottom of slope to work. William, the brother and partner of Adam Wehry, met James Richards (the fire boss) at steam-pump engine, a short distance east of slope bottom. He asked Richards how his place was. Richards replied it was all right when he left it, but he, Wehry, should try it himself with his safety-lamp. Wehry denied that Richards used the words "all right when he left it," or that he told him to try it with his safety-lamp. In their conversation in the engine-house, Richards told Wehry to square-up breast No. 4, he wanted to put men to work in it. William Wehry went in as far as breast No. 2 where his brother Adam was waiting for him; both went up the manway of breast No. 2 as far as the first cross-heading went into No. 3 breast, inside cross-heading. William went into No. 4. Adam went up the inside manway of No. 3 to get some tools to work with in squaring up No. 4. While up near face of No. 3 the gas exploded, and burned him severely on face, neck, arms, and hands. William Wehry testified to having worked in the breast from the time it was first started to the time of the explosion, and had never seen gas in it before.

Improvements in Ventilation.

There have been three fans erected at collieries in the district during the year: One at Short Mountain and Lykens Valley colliery, fourteen feet diameter; one at Greenback colliery, twelve feet diameter; one at Summit Branch colliery to ventilate the White's vein in tunnel level, fifteen feet diameter, making in all fifty-six fans in the district, which comprises fifty-one collieries of all classes.

It is a source of more than ordinary pleasure to me to be able to state that the condition of the collieries of the district is improving rapidly in this particular, as well as in that of others. There are, however, some few collieries which need improving, and those are collieries in which (carbureted hydrogen gas) fire-damp is not given off by the strata. In some of this class of collieries there is a lack, on the part of those in charge, in circulating the air-current properly to the face of the working places, especially to the face of gangways, chutes, and headings. If there is any part of the inside workings of a colliery which require a proper and adequate amount of pure air circulating in them, it is gangways, chutes, and headings, on account of their being driven in what is called the fast and ahead of the main air-current of the colliery, thereby necessitating a sufficient supply of pure air to render harmless and carry away the unhealthy poisonous gases and smoke emitted by the combustion of blasting powder, the burning of lamps, &c. In work of this character the miner, after blasting, is unable to enter or go back to his working place until the smoke clears or dies away, so as to enable him to detect overhanging dangerous coal or slate, as the case may be, and bar it down. Although the working place may be partly clear of smoke, it is not healthy on account of the improper circula-

tion of the air-current to carry away the gases produced by blasting. There may be men who, having charge of the inside workings of collieries, do not give this due consideration, and do unto others as they would wish others do unto them. We have it from undisputed authority, that powder after combustion leaves after it, as a residue, three gases, and the most prominent among them (carbon acid gas) black-damp, therefore requiring a sufficient supply of pure air to carry away and render harmless this deadly enemy to the health and life of those whose daily avocation requires them to delve in the coal mines.

Taking the district as a whole, it has improved rapidly in ventilation and general safety during the last few years. The greater part or most of the collieries in the district are in first-class condition as far as ventilation is concerned.

Prosecutions for Violation of the Mine Law.

There were three complaints entered and tried during the year in the court of quarter sessions of Northumberland county for violations of the act of March 3, 1870.

The first was John D. Jones, inside foreman at William Schwenk & Co.'s Black Diamond colliery, near Mount Carmel, Northumberland county, for neglecting to comply with the eighth section of said act, which says: "He or his assistants shall examine carefully the workings of all mines generating explosive gases, every morning before the miners enter the coal mine or colliery, and shall ascertain that the mine is free from danger." This he neglected to do. On the morning of March 6 two men, named Isaac Lewis and Alexander Latsha, detected gas in their breast. One of them went out to bottom of slope for Jones. He came in and removed it out to the second next breast where men were working. Their naked lamps ignited it and burned one of them. It fired in along the cross-headings to where it was being removed from, burning Lewis, Latsha, Jones, (the boss,) and a man by the name of Clements. The case was tried at the August term of court. The jury rendered a verdict of not guilty, each party, viz: The prosecutor and defendant each pay half the costs.

The next two were that of Reuben Campbell and Elias Culp for violating the eleventh and nineteenth sections of said act in riding up on a loaded mine car in No. 9 slope of the Cameron colliery, on October 26. Those two cases were tried at the December term. In each case the jury rendered a verdict of guilty in manner and form as indicted. His Honor William M. Rockafeller sentenced each to pay a fine of one dollar, costs of prosecution, and undergo an imprisonment of ten days in the jail of Northumberland county.

REGISTER OF FATAL CASUALTIES.

DATE	Names.	Collieries.	Occupations.	Age.	Married or single.	Children.	Remarks.
Jan. 3	Peter D. Elby,	Short Mountain,	Miner,	42	Married,	6	Killed; caught between top of loaded mine car and gangway collar.
3	Thomas Williams,	Logan,	Miner,	35	Married,	2	Fatally injured; fall of slate; died.
5	Martin Kane,	Locust Run,	Laborer,	65	Married,		Smothered by rush of coal dirt at dirt bank.
31	John Manning,	Mount Carmel shaft,	Miner,	41	Married,	6	Fatally injured; jammed between mine car and coal.
Feb. 2	Joseph Confaskl,	Burnside,	Laborer,	17	Single,		Fatally injured; explosion of powder; died.
2	William Yost,	Cameron,	Laborer,	55	Married,	3	Fatally injured; jammed between mine car and wall of slope house.
Mar. 23	Simon Frederick,	Williamstown,	Miner,	48	Married,	5	Killed; caught between return air-box and mine car.
18	Martin Kinaskie,	Luke Fidler,	Driver,	18	Single,		Fatally injured; caught between mine cars; died.
27	John T. Carroll,	Enterprise,	Laborer,	15			Fatally injured; fall of top slate, (fire-clay;) died.
April 12	Samuel Smith,	Centralia,	Boss loader,	37	Married,	4	Killed; fell down temporary travelling-way.
17	William Thomas Jefferson	Mount Carmel,	Door-tender,	13			Fatally injured; jammed between mine car and door.
18	John D. Meck,	Reliance,	Miner,	23	Single,		Fatally injured; explosion of powder; died.
May 12	John Miller,	Enterprise,	Miner,	23	Married,	3	Killed; fall of top rock, (fire-clay.)
13	Richard Fitzpatrick,	Williamstown,	Miner,	30	Married,		Killed; fall of top rock.
20	James Lawrence,	Buck Ridge,	Miner,	51	Married,		Killed; explosion of gas.
20	David Green,	Buck Ridge,	Miner,	23	Single,		Fatally injured; explosion of gas; died.
26	John O'Brien,	Williamstown,	Laborer,	23	Single,		Killed; fall of top slate.
June 6	Ferdinand Rinehart,	Excelsior,	Miner,	48	Married,	5	Killed; fall of coal and slate.
15	Patrick Quinn,	North Ashland,	Miner,	38	Married,		Fatally injured; fall of coal; died.
July 12	George Harper,	Excelsior,	Miner,	28	Married,	4	Killed; fall of coal and slate.
12	William Robinson,	Excelsior,	Miner,	44	Married,	1	Killed; fall of coal and slate.
13	Andrew Powick,	Morris Ridge,	Laborer,	19	Single,		Fatally injured; caught between mine cars and side of gangway; died.
17	Patrick Tynon,	Williamstown,	Miner,	27	Single,		Fatally injured; explosion of gas; died.
Aug. 1	John Sheridan,	Mount Carmel shaft,	Miner,	33	Married,	5	Killed; fall of top coal.
2	John G. Charleston,	Luke Fidler,	Miner,	43	Married,	3	Killed; struck by loaded mine car.
13	Joseph J. Ramsey,	Mount Carmel,	Door-tender,	14			Fatally injured; run over by mine cars; died.
15	Henry Messersmith,	Williamstown,	Laborer,	25	Married,		Killed while in saw-mill; was struck by a flying board from circular saw.
18	Louis M. Jones,	Tunnel,	Engineer,	60	Married,	3	Fatally injured; scalded; died.
Sept. 4	Stanislan Pulaskie,	Pennsylvania,	Miner,	38	Married,		Fatally injured; fall of coal and slate.
5	Robert Snyder,	Short Mountain,	Slate-picker,	16			Fatally injured; run over by locomotive.
7	Richard Simmons,	Cameron,	Bottomman,	16			Killed; run over by mine cars.
7	Nicholas Krell,	Locust Spring,	Miner,	36	Married,	2	Killed; fall of top slate.
21	John Nye, senior,	Burnside,	Miner,	53	Married,	5	Killed; fall of slate.
29	Nicholas Schowde,	Locust Gap,	Miner,	37			Killed; rush of coal, slate, and rock in breast.
Oct. 5	Charles Hammel,	West Brookside,	Laborer,	24	Married,		Killed; fall of top coal and slate.
17	William Geraght,	North Ashland,	Laborer,	19	Single,		Killed; jammed between mine car and prop.
Nov. 14	Patrick Conway,	Preston, No. 2,	Driver,	16	Single,		Fatally injured; crushed between mine cars and gangway.
20	Michael Ryan,	Pennsylvania,	Bottomboy,	14			Killed; jammed between mine cars at bottom of slope.
21	John McNally,	Logan,	Laborer,	22	Single,		Killed; fall of top coal.

Nov. 23	John Flemming, . .	Black Diamond, . .	Miner, ...	22	Single, . .	. .	Killed; fall of top coal.
25	William H. Armstrong, .	Big Mountain, . . .	Miner, ...	26	Married, . .	. .	Killed; fall of top coal.
Dec. 2	David Foley, ...	Mount Carmel shaft,	Miner, ...	24	Married, . .	. .	Killed; fall of top coal.
15	Levi Stahl, ...	West Brookside, . .	Miner, ...	30	Single, . .	. .	Killed; fall of top coal.
23	James Johnson, ...	Excelsior, ...	Laborer, ...	31	Single, . .	. .	Killed; fall of top coal and slate.

REGISTER OF NON-FATAL CASUALTIES.

DATE.	Names.	Collieries.	Occupation.	Remarks.
Jan. 4	John Mattis,	Cameron,	Miner,	Burned on head, face, and hands, by an explosion of CH. gas.
4	Joseph Calwish,	Cameron,	Miner,	Slightly burned on head, face, and hands, by an explosion of CH. gas.
4	Michael Gaughen,	Excelsior,	Miner,	Leg and back injured by a fall of coal.
5	Peter McAndrew,	Locust Spring,	Miner,	Head and hand cut by a fall of coal.
9	George W. Mourer,	Reliance,	Miner,	Hand injured by point of pick being driven through it.
16	Joseph Surls,	Burnside,	Laborer,	Finger cut off; caught between rock and buggy.
16	John McHale,	Big Mine Run,	Miner,	Body injured by a fall of coal.
19	James Falurey,	Back Ridge,	Slate-picker,	Fell on sheet-iron in chute, in breaker, and broke his arm.
25	Bartley Rollick,	Henry Clay Shaft,	Miner,	Fell and cut his arm badly.
26	Peter Joyce,	Bast,	Watchman,	Shoulder injured; fell on breaker steps.
28	Benneville Long,	Sterling,		Burned by an explosion of CH. gas.
28	C. N. Morgan,	Bear Valley,	Fireman,	Hand injured; boiler man-hole door fell on it.
14	Condy Cunningham,	Big Mine Run,	Miner,	Injured by falling down chute.
Feb. 2	Michael Cougaskle,	Burnside,	Miner,	Head, face, neck, and hands burned by an explosion of powder.
2	William Schrader,	Bear Valley,	Miner,	Leg cut by ax, while cutting a prop.
3	Isaac Wolf,	Summit Branch,	Miner,	Hip injured by being struck by a rock from blast.
4	John Conry,	Bast,	Miner,	Side and leg bruised; struck by a piece of slate.
9	Frank Vase,	Cameron,	Driver,	Body injured; squeezed between dirt-dumper and breaker.
10	Henry J. Towdy,	Greenback,	Superintendent,	Body injured; squeezed between mine car and center prop in slope.
14	John Durkin,	Preston, No. 3,	Miner,	Hand and back injured by a fall of coal
14	George Lauer,	Bear Valley,	Miner,	Finger nearly cut off by slate falling on it.
15	Casper Houtz,	Summit Branch,	Miner,	Head and leg injured by a fall of coal.
15	Emile Feese,	Bear Valley,	Miner,	Foot cut by ax, while chopping a prop.
16	William Yalzlow,	Pennsylvania,	Miner,	Hands burned by an explosion of powder.
16	John Molafekey,	Pennsylvania,	Laborer,	Severely burned by an explosion of powder.
22	William Richardson,	Burnside,	Laborer,	Hip hurt by being jammed between mine car and prop.
27	James McDonald,	West Brookside,	Laborer,	End of finger cut off while unhitching coupling chain.
28	George Conner,	Bast,	Starter,	Face and body injured by a premature blast.
Mar. 2	John Horan,	Monitor,	Miner,	Head injured by a fall of top coal.
6	John D. Jones,	Black Diamond,	Inside boss,	Burned on face and one hand,
6	Isaac Lewis,	Black Diamond,	Miner,	Face and hands burned,
6	Thomas Perry,	Black Diamond,	Miner,	Face, neck, arms, and hands burned, } Explosion of gas.
6	Alexander Latsha,	Black Diamond,	Laborer,	Face, neck, arms, and hands burned,
6	Samuel Clement,	Black Diamond,	Laborer,	Hands and face burned,
9	Patrick Devine,	Bast,	Visitor,	Leg broken and arm injured; fell down stairs in engine-house.
11	Henry Zerby,	Summit Branch,	Laborer,	Leg broken by being caught between mine cars.
13	George Kline,	Reliance,	Driver,	Hand and heel cut and bruised; mine car ran over him.
14	Henry Farley,	Luke Fidler,	Miner,	Leg broken by a fall of coal.
16	Frederick Hahn, junior,	Centralia,	Miner,	Shoulder blade broken; struck by a piece of coal from blast.
19	Henry Nye,	Peerless,	Miner,	Slightly burned on face and hand,
20	George Koser,	Short Mountain,	Miner,	Slightly burned on face and hand, } Explosion of gas.
20	John Chuloskie,	Short Mountain,	Miner,	Face and hands burned,
23	James Woods,	Locust Gap,	Rock-bank man,	Leg injured by being kicked by mule.
24	Aaron Kelfer,	Locust Gap,	Slate-picker,	Leg broken by being thrown down by two other boys, who were quarreling.
27	Richard James,	West Brookside,	Miner,	Leg and back bruised by a fall of coal and slate.
27	Frank Row,	Summit Branch,	Miner,	Leg broken by being caught in step while running away from blast in breast.

	31	John Billman,	Burnside,	Driver, Injured about hips by being crushed between mine cars.
April	1	Samuel Slocum,	Preston, No. 3,	Miner, Rib broken; air-pipe fell on him.
	6	Thomas Rowan,	Centralia,	Laborer, Leg injured by being run over by dirt dumper.
	10	Grant McElwain,	West Brookside,	Laborer, Hand cut off; a loaded car ran over it.
	14	Frank Clark,	Buck Ridge,	Miner, Hands, face, and back of neck burned, } Explosion of gas.
	14	David Morgan,	Buck Ridge,	Miner, Hands, face, and back of neck burned, }
	17	Michael McCaulley,	Pennsylvania,	Miner, Leg broken by a fall of top slate.
	17	John Morris,	Pennsylvania,	Miner, Leg broken by a fall of top slate.
	18	Cyrus Evart,	Reliance,	Driver, Foot injured; run a blasting-needle through it.
	21	James Malloy,	Monitor,	Miner, Ankle dislocated by a fall of coal.
	24	Nicholas Snyder,	Henry Clay Shaft,	Miner, Hand and face burned by an explosion of gas.
	25	Thomas Grady,	Bast,	Miner, Face, head, and hands cut and injured by being struck by coal from blast.
	26	Daniel Sullivan,	Montana,	Miner, Body injured by a fall of coal.
	27	Thomas Lally,	Locust Spring,	Laborer, Hand mashed, while timbering.
	28	Sampson Cook,	Buck Ridge,	Miner, Face and hands slightly burned by an explosion of gas.
May	3	Anthony Gallagher,	Black Diamond,	Miner, Body and hips injured by a fall of coal.
	9	George Storey,	Locust Gap,	Miner, Leg broken by a prop falling on it.
	9	George A. Lauer,	Bear Valley,	Driver, Leg broken by being crushed between dirt dumper and wall, under breaker.
	11	Robert Sterling,	West Brookside,	Miner, Body bruised; caught between a piece of slate and prop.
	16	John Graham,	Hickory Ridge,	Arm broken; a piece of sheave-wheel fell on it.
	16	Henry Gumber,	West Brookside,	Miner, Jaw broken by being caught between buggy and top rock.
	17	Charles Weidman,	Potts,	Miner, Rib broken; a piece of slate fell on him.
	17	John Pitts,	Keystone,	Fire-boss, Rib fractured; a prop fell on him.
	20	Frederick Hoffman,	Buck Ridge,	Miner, Burned on head, face, neck, arms, and body by explosion of gas.
	23	Edward Startzel,	Burnside,	Driver, Legs injured; run over by dirt dumper.
	24	Frank Berrigan, junior,	North Ashland,	Driver, Leg broken and badly cut; fell under mine cars.
	25	John Dillon,	Hickory Ridge,	Miner, Two ribs broken by a fall of coal.
	26	Alexander Wardrop,	Pennsylvania,	Miner, body injured by a fall of coal.
	29	John Carmitchel,	Pennsylvania,	Miner, Burned by an explosion of powder.
	29	Anthony Breslin,	Pennsylvania,	Miner, Burned by an explosion of powder.
	29	Mungo Furman,	Pennsylvania,	Miner, Burned by an explosion of powder.
	30	William Delbler,	Cameron,	Miner, Face, neck, and hands burned, } Explosion of gas.
	30	Jesse Fuller,	Cameron,	Laborer, Face, neck, and hands burned, }
June	2	Jeremiah Chernick,	Enterprise,	Miner, Arm broken by being struck by a piece of coal.
	3	John Jasinkie,	Sterling,	Miner, Back hurt by a fall of coal.
	3	Stanislau Ambrose,	Enterprise,	Miner, Injured by being crushed between loaded mine cars and side of gangway.
	7	John Haldeman,	West Brookside,	Laborer, Leg broken; a piece of coal fell on it.
	9	John Reagan,	Bast,	Laborer, Ankle knocked out of joint; a piece of slate struck him.
	9	Michael Woods,	Locust Spring,	Miner, Back sprained by a fall of coal.
	13	Joseph Hughes,	Morris Ridge,	Miner, Ribs broken and otherwise injured about the body by a fall of coal.
	13	Joseph Relchner,	Carson,	Miner, Leg broken by a fall of top slate.
	13	Patrick Riley,	Bast,	Laborer, Hand mashed by being struck by a pick.
	14	William Samuel,	Potts,	Fireman, Jaw-bone broken; in attempting to sprag a car, the brake lever struck him.
	15	Michael Welsh,	Preston, No. 2,	Driver, Hip injured by being kicked by a mule.
	16	John Thomas,	Bast,	Miner, Arm slightly burned by an explosion of gas.
	19	Patrick Moran,	Burnside,	Miner, Hand badly bruised and cut; caught between mine car and timber.
	19	Edward Morrissey,	Tunnel,	Pump-man, Arm and side injured by being thrown off mine car in slope.
	19	Frederick Helber,	Mount Carmel Shaft,	Stable-man, Back injured by being kicked by a mule.
	19	John Amos,	Reliance,	Miner, Back and shoulder cut and bruised by a fall of coal.
	20	Benjamin Shaffer,	Locust Spring,	Miner, Finger mashed by a fall of coal.
	26	Frederick McGrady,	Locust Gap,	Laborer, Injured about body; fell off breaker trestling.
	26	Irwin McCullum,	North Franklin, No. 2,	Driver, Arm fractured by being thrown off mule.
July	3	Joseph Bosch,	Monitor,	Miner, Leg broken by a fall of coal.

REGISTER OF NON-FATAL CASUALTIES—*Continued.*

DATE.	Names.	Collieries.	Occupation.	Remarks.
July 12	James Narrance,	Excelsior,	Miner,	Thigh bone broken in two places by a fall of coal.
14	James Deneen,	Locust Gap,	Laborer,	Arm broken while uncoupling railroad cars outside.
17	John W. Welsh,	Williamstown,	Miner,	Head, face, neck, and hands burned by an explosion of gas.
18	John Long,	Merriam,	Laborer,	Foot cut by being struck by a pick.
22	Charles Krapp,	Potts,	Door tender,	Arm broken; caught between mine car and gangway timber.
22	Isaac Pattison,	West Brookside,	Laborer,	Finger mashed; caught by flange of wheel of mine car.
24	George Fry,	Stirling,	Miner,	Hand, face, neck, and arms burned by an explosion of gas.
24	David Morgan,	Stirling,	Miner,	Slightly burned by an explosion of gas.
24	Thomas Golden,	Burnside,	Bottom man,	Hand bruised; caught between cross head and working barrel of pump.
26	William Yocum,	North Franklin No. 2,	Elevator boy,	Wrist cut; struck by a chip of wire while taking off segments.
27	Job Evans,	Preston No. 3,	Loader boss,	Leg injured; caught between mine cars.
Aug. 1	James Bache,	Locust Spring,	Miner,	Finger and thumb cut by a piece of coal falling.
2	William Kramer,	Preston No 3,	Door boy,	Finger mashed by being caught between bumpers of mine cars.
4	Lawrence Higgins, junior,	Stirling,	Laborer,	Foot injured by a rock wagon passing over it.
4	Jesse Wentzel,	Tunnel,	Platform man,	Hand cut; struck by a piece of coal.
7	Michael Connelly,	West Brookside,	Laborer,	Heel mashed; ran over by mine car.
9	Reese Watkins,	Big Mountain,	Miner,	Shoulder-blade broken; he fell down breast.
16	Elmer Logan,	Luke Fidler,	Driver,	Shoulder and arm badly lacerated; caught between mine cars and top of gangway.
17	Patrick McHale,	North Ashland,	Driver,	Shoulder-blade dislocated; caught between mine cars and side of gangway.
18	William Christ,	Burnside,	Laborer,	Back of hand mashed; caught between wheel of buggy and bottom slate.
19	John McElhenny,	Centralia,	Slope man,	Leg broken by empty mine car striking him.
22	Henry Lentz,	Keystone,	General laborer,	Rib broken by being kicked by a mule.
23	Percey Adams,	Cameron,	Driver,	Shoulder and body injured; caught between mine car and side of gangway.
23	Frank Colbraker,	Luke Fidler,	Chute boss,	Leg broken by flange being blown off steam-pipe.
23	William Heath,	Preston No. 2,	Miner,	Burned by an explosion of gas.
23	John Rodgers,	Preston No. 2,	Miner,	Burned by an explosion of gas.
26	James Gavin,	Logan,	Car loader,	Hand mashed; caught between bumpers of railroad cars.
28	Henry Boyd,	Luke Fidler,	Miner,	Hands, arms, face, and neck burned by an explosion of gas.
28	Stephen Klow,	Pennsylvania,	Miner,	Body seriously injured by a fall of top coal and slate.
29	Joseph Row,	Burnside,	Car and ash man,	Body injured; kicked by a mule.
Sept. 1	Joseph Schilling,	North Ashland,	Bottom man,	Hips injured; caught between mine cars.
4	Patrick Brazzle,	Preston No. 2,	Driver,	Foot injured; mine car ran over it.
13	Daniel Kehler,	Black Diamond,	Driver, outside,	Arm hurt; ran over by dirt dumper.
19	Daniel Hoffman,	Williamstown,	Miner,	Head and body injured by a fall of coal.
21	Joel Paul,	Cameron,	Miner,	Slightly burned on hands and face by gas.
21	James O'Brien,	Big Mountain,	Driver,	Leg broken; caught between rail and mine car.
21	Adam Wehry,	Big Mountain,	Laborer,	Burned on head, face, neck, and hands by an explosion of gas.
23	John Sanders,	Pennsylvania,	Miner,	Head and body injured by a fall of coal.
25	Anthony Padden,	Logan,	Miner,	Body injured by a fall of coal.
28	Michael Morar,	Morris Ridge,		Body injured; bumped between empty mine cars.
30	Milton Haas,	Black Diamond,		Arm broke by a plank falling on it.
30	Joseph Schilling,	North Ashland,	Bottom man,	Injured on body by being crushed between empty mine cars.
Oct. 2	E. J. Coyle,	Pennsylvania,	Miner,	Back injured by a fall of coal.
3	John Koener,	Locust Spring,	Miner,	Leg broken by being knocked down chute by a piece of stone.
5	Martin Comer,	Bast,	Driver,	Arm fractured by being crushed between top of mine car and gangway collar.
6	Richard Finner,	Logan,	Miner,	Struck by coal from blast.

6	Daniel Carl,	Logan,	Miner,	Struck by coal from blast.
6	Christ Shamper,	West Brookside,	Miner,	Rib broken and side bruised; struck by a piece of coal from blast.
6	George Welser,	Peerless,	Miner,	Hands, face, neck, and back burned by an explosion of gas.
7	August Crane,	Merriam,	Loader,	Body injured; caught between mine car and gangway timber.
9	Joseph Metzinger,	Merriam,	Starter,	Shoulder and back injured; crushed between mine cars.
10	John Brovey,	Stirling,	Miner,	Back injured by a fall of top coal.
11	Nicholas Leffler,	Merriam,	Miner,	Face and eyes injured by a premature blast.
11	James Tinerty,	Cameron,	Miner,	Slightly burned by an explosion of gas.
14	Martin Pulaski,	Burnside,	Miner,	Back injured by a fall of top coal.
14	Anthony Haley,	Merriam,	Miner,	Four ribs broken by a fall of top coal.
16	Christian Etzel,	Burnside,	Miner,	Side and hip injured by a fall of coal.
18	Timothy Brennan,	Mt. Carmel,	Mine-car runner,	Leg broken; he fell while running cars.
18	Robert Boyd,	Luke Fidler,	Miner,	Seriously injured by a fall of rock.
19	Martin Kurbuskie,	Big Mountain,	Miner,	Seriously cut on instep by a piece of coal falling on it.
19	Martin Burke,	Locust Spring,	Driver,	Leg injured; he fell off dirt car and was run over on dirt bank.
23	Teddy Cardin,	Preston No. 2,	Starter,	Ribs broken; a stone fell on him while starting a battery.
25	Frank Bosehee,	Locust Gap,	Dirt bank boy,	Fell off and right foot run over by locomotive; amputated afterwards, on same day.
25	Peter Murza,	Big Mountain,		Body injured; caught between mine car and side of gangway.
25	William Hagerty,	Centralia,	Tip man,	Leg broken by mine car falling on him backward after being tipped.
25	Joseph Camp,	Reliance,	Miner,	Face cut and bruised by being kicked by a mule.
27	Stanislau Waythrowick,	Big Mountain,	Miner,	Three fingers of left hand broken by a fall of coal.
Nov. 3	Daniel McAndrew,	Reliance,	Miner,	Rib broken; he slipped and fell down while traveling down manway.
7	David Evans,	Mt. Carmel shaft,	Miner,	Collar bone dislocated; a piece of rock fell on him.
15	Sherman Shower,	West Brookside,	Driver,	Ribs fractured by being kicked by a mule.
16	Isaac Beaver,	Centralia,	Top man,	Rib broken; he fell on a rail.
16	William Cronin,	Buck Ridge,	Laborer,	Leg and arm broken and otherwise injured about head and body by being struck by wire rope of No. 9 hoisting slope while changing on drum.
20	Jacob Blotch,	North Ashland,	Miner,	Arm broken by a lump of coal falling on it.
22	James Purcell,	Continental,	Laborer,	Leg broken by being struck by a lump of coal while in chute.
25	Edward J. Lewis,	Keystone,	Charge man,	Body bruised; he fell down pump slope.
29	Samuel Roberts,	Cameron,	Laborer,	Head, face, arms, and hands injured by a premature blast.
29	Israel Allison,	Cameron,	Laborer,	Hands slightly, face and eyes seriously, injured by premature blast.
Dec. 2	Patrick Sheeran,	Continental,	Driver,	Leg broke by being run over by dirt dumper on dirt bank.
16	Michael Carey,	Preston No. 3,	Loader,	Wrist broken; struck by a piece of coal.
18	Andrew Long,	Locust Spring,	Timber man,	Hips squeezed and ribs broken; caught between mine car and gangway door.
22	—— Hoffman,	Pennsylvania,	Miner,	Eye knocked out; struck by a piece of coal while riding up slope.
27	William Powers,	Black Diamond,	Miner,	Slightly injured while starting coal in manway.
27	Michael Schilling,	Locust Spring,	Miner,	Back injured by a fall of coal in breast.

RECAPITULATION OF FATAL ACCIDENTS.

Explosions of CH. gas,	3
Explosions of powder,	2
Falls of coal, roof, &c.,	21
Mine cars and machinery,	13
Miscellaneous underground,	2
Miscellaneous overground,	3
Total,	44

RECAPITULATION OF NON-FATAL ACCIDENTS.

Explosions of CH. gas,	26
Explosions of powder,	5
Falls of coal, roof, &c.,	45
Mine cars and machinery,	41
Premature blasts,	4
Kicked by mules,	6
Miscellaneous underground,	34
Miscellaneous overground,	21
Total,	182

Comparative Statement of Casualties, Tonnage, and Employees, for Five Years, in the Third or Shamokin Division of Mining District of Schuylkill.

YEARS.	Killed.	Injured.	Total.	Total number of employees	Number of employees to each casualty.	Total number tons of coal mined	Number tons of coal mined to each fatal casualty.	Number tons of coal mined to each non-fatal casualty.	Ratio tons of coal mined to each casualty.	Number tons of coal to each employee.
1878,	47	128	175	11 106	63.4	3,070 218.14	65 323 16	23,986.10	17,544.02	276.09
1879,	46	103	149	11,094	74 6	3 816 122.16	82.959.04	37,049.14	25,611.11	343.19
1880,	34	124	158	11 616	73.5	3 461,371.18	101.805 01	27,914.06	21,907.08	211 18
1881,	48	147	195	11 865	60 8	4 432,601.13	92,346	30,154	22 731	373
1882,	41	182	226	12,973	57 4	4 588 799.04	104 290	25 213	20 304	353
Total,	219	684	903	. . .	. . .	19,369,114.05				
Average,	43$\frac{7}{10}$	136$\frac{4}{5}$	180$\frac{3}{5}$	11 730$\frac{2}{5}$	67.9	3,873.822	89,344	28 863	21.619	311

NUMBER OF EMPLOYEES, DAYS WORKED, COAL

COLLIERIES.	OPERATORS.	INSIDE.		
		Number of inside bosses.	Number of miners.	Numb'r of laborers and company men.
1. North Franklin, No. 1,	Philadelphia and Reading Coal and Iron Company,	...	8	...
2. North Franklin, No. 2,	do. do.	1	49	20
3. Bear Valley,	do. do.	1	52	10
4. Burnside,	do. do.	2	132	23
5. George Fales,	do. do.	..		..
6. Reliance,	do. do.	2	132	6
7. Mt. Carmel Shaft,	do. do.	3	126	14
8. Locust Spring,	do. do.	3	149	38
9. Helfenstein,	do. do.	...		...
10. Merriam,	do. do.	5	109	50
11. Potts,	do. do.	4	26	40
12. Keystone,	do. do.	3	40	16
13. Tunnel,	do. do.	4	51	36
14. Locust Run,	do. do.	...	..	..
15. Bast,	do. do.	4	81	36
16. North Ashland,	do. do.	2	65	60
17. Preston, Nos. 1 and 2,	do. do.	5	70	39
18. Preston, No. 3,	do. do.	5	64	51
19. West Brookside,	do. do.	3	301	99
20. Big Mountain,	Patterson & Llewellyn,	..	200	140
21. Excelsior,	Excelsior Coal Mining Company,	...	111	47
22. Enterprise,	Enterprise Coal Company,		111	106
23. Locust Gap,	Graber & Shepp,	..	40	20
24. Peerless,	Cruikshank & Ennis,	...	65	50
25. Sterling,	Kendrick & Co.,	...	120	62
26. Royal Oak,	Tillet & Bro.,	.	7	2
27. Ben. Franklin,	Douty & Baumgardner,	...	27	17
28. Monitor,	George W. Johns & Bro.,	..	130	65
29. Cameron,	Mineral Railroad and Mining Company,	...	150	139
30. Luke Fidler,	do. do.	...	100	86
31. Pennsylvania,	do. do.	...	110	105
32. Hickory Ridge,	do. do.	...	24	32
33. Short Mountain,	Lykens Valley Coal Company,	...	203	215
34. Williamstown,	Summit Branch Railroad Company,	...	217	330
35. Lancaster,	Smith & Keiser,	..	40	2
36. Black Diamond,	William Schwenck & Co.,	..	31	14
37. Mt. Carmel,	Montellus, Righter & Co.,	...	130	63
38. Big Mine Run,	J. Taylor & Co.,	..	131	72
39. Continental,	Lehigh Valley Coal Company,	..	18	63
40. Buck Ridge,	May, Audenried & Co.,	..	65	42
41. Carson,	M. E. Robinson,	...	20	12
42. Montana,	A. H. Church,	...	30	20
43. Gordon,	William Cleavor & Co.,	...	11	23
44. Greenback,	H. J. Tondy,	...	73	10
45. Bellmore,	S. S. Bickel & Co.,	.	17	17
46. Morris Ridge,	Isaac May & Co.,	...	55	58
47. Henry Clay,	J. Langdon & Co.,	...	105	68
48. Big Run Gap,	James Fennel,	..	4	6
49. Rausch Gap,	W. H. Yohe,	..	..	...
50. Pioneer,	David Vaughn,	...	1	1
51. Logan,	Louis A. Reilly & Co.,	..	142	135
52. Centralia,	do. do.	...	88	80
53. Hazel Dell,	do. do.	...	3	14
54. Bear City,	John Q. Williams,	...	2	...
55. Hazel Dell,	Sykes & Jones,	..	...	..
Totals,		...	..	...
Consumed or sold at colliery,				
Total production,				

MINED, &c., FOR YEAR ENDING DECEMBER 31, 1882.

INSIDE.			OUTSIDE.										
Number of drivers.	Number of door boys.	Total.	Number of bosses and mechanics.	Number of laborers and company men.	Number of drivers and slate-pickers.	Total.	Grand total.	Number of mules and horses.	Number of locomotives inside.	Number of kegs of powder used.	Number of days worked by breaker.	Number of tons of coal shipped.	
..	...	8	2	17	..	19	27	..	....	...	..	...	1
10	3	83	12	45	53	110	193	33	....	1,800	244	86,382.11	2
8	2	73	10	41	43	94	167	43	...	1,310	204	69,634.03	3
17	5	179	6	36	51	93	272	29	...	1,780	245	68,048.02	4
.	...	.	.	1	..	1	1	..	...	.	.	...	5
12	3	155	12	43	61	116	271	35	....	3,485	244	118,840.16	6
49	16	308	13	62	110	185	493	60	...	4,800	233½	182,139.07	7
9	6	205	8	40	54	102	307	36	....	2,490	237½	95,447.17	8
..	.	.	1	..	..	1	1	1	....	.	.	...	9
14	13	191	13	51	54	118	309	38	....	2,175	235	116,771.16	10
15	7	92	13	48	56	117	209	33	..	245	217	83,941.05	11
4	4	67	11	30	17	58	125	9	...	90	35½	2,709.06	12
12	5	108	17	43	63	123	231	22	..	175	193½	49,094.17	13
.	..	..	3	5	.	8	8	..	....	3,530	282½	125,459.19	14
8	11	140	8	58	55	121	261	31	...	1,375	240⅝	90,160.18	15
12	5	144	13	47	63	123	267	38	....	1,825	233⅝	111,035.16	16
12	8	134	14	58	62	134	268	46	....	1,090	238⅝	68 028.15	17
16	5	141	9	39	76	124	265	48	...	690	240	86 078.18	18
54	11	468	30	71	78	179	647	116	1	4,100	231	289 892 02	19
50	20	410	20	70	50	140	550	90	....	3,965	260	168 769.15	20
13	3	174	7	49	44	100	274	41	....	3,530	282½	125,464.14	21
23	3	243	11	40	52	103	346	28	...	3,343	254⅜	127,019.17	22
6	3	69	12	30	85	127	196	19	...	1 941	254⅜	73,204.15	23
3	..	118	5	20	33	58	176	15	...	1,660	258¾	47,824.18	24
10	4	196	10	24	66	100	296	24	...	2 016	247	99.339.18	25
2	.	11	....	3	2	5	16	5	....	120	240	3 850.00	26
3	1	48	7	10	31	47	95	21	..	520	223	31,006.16	27
17	3	215	10	32	85	127	342	30	2	2.550	259⅛	131.546 11	28
40	10	339	16	84	100	200	539	74	...	4,352	282⅝	164,596 11	29
20	6	212	10	46	79	135	347	64	..	3,067	272⅞	124,973.15	30
20	4	239	10	40	80	130	369	43	...	4 137	286⅝	125,167.01	31
5	..	61	5	25	19	49	110	15	...	494	251⅝	23.640.15	32
50	41	509	60	74	120	254	763	150	..	2,336	262¼	165 095.10	33
40	25	612	15	85	160	260	872	134	2	8 477	298¾	342,218.09	34
4	...	46	4	4	21	29	75	13	....	748	204½	22,751.15	35
2	...	47	4	10	30	44	91	5	....	520	221	21 329.11	36
26	11	230	17	49	86	152	382	27	...	3,642	248½	170,642.18	37
14	13	230	14	47	90	151	381	40	...	2,969	238⅝	132,362.11	38
16	...	97	11	50	92	153	250	..	1	169	78½	16,541.17	39
8	...	115	2	92	31	125	240	21	....	1,468	235	66,555.13	40
3	1	36	6	8	14	28	64	6	....	381	136	8,070.04	41
4	3	57	3	20	33	83	140	14	....	1,050	221	35,854.01	42
3	1	38	5	18	10	33	71	13	....	130	171	23,368 10	43
7	..	90	9	15	32	56	146	17	....	1,419	215	42,514 15	44
2	1	37	21	22	11	54	91	7	..	125	104	6 805 07	45
3	1	117	6	20	40	66	183	10	....	1,438	209½	55,490.06	46
10	4	187	9	24	55	88	275	31	...	1,776	291½	91,674.18	47
2	...	12	1	5	2	8	20	7	....	98	250	2,493.00	48
..	...	6	....	....	....	....	6	....	...	.	.	1,088.04	49
..	.	2	1	..	1	2	4	1	....	15	149	440.00	50
17	7	301	19	75	122	216	517	34	....	4,888	234	231,169.00	51
12	6	186	13	49	64	126	312	23	....	2,730	241	88,283.00	52
1	...	18	5	6	....	11	29	2	....	40	.	*	53
1	...	3	....	4	....	4	7	2	....	60	140	2.000.00	54
..	...	40	...	...	..	36	76	....	...	....	50	7,638.01	55
..	...	7,847	....	...	....	5,126	12,973	1,648	6	93 514	216⅞	4,329,054.00	
..												259,745.04	
..												4,588,799 04	

*Sinking slope.

NAMES OF COLLIERIES IN OPERATION AND COAL MINED IN THIRD OR SHAMOKIN DIVISION OF THE SCHUYLKILL DISTRICT, FOR YEARS 1878, 1879, 1880, 1881, 1882.

NAMES OF COLLIERIES.	LOCATION OF COLLIERIES.	NAMES OF OPERATORS.	COAL PRODUCED.				
			1878.	1879.	1880.	1881.	1882.
Mount Carmel shaft, . .	Alaska Station, Northumberland county,	Phila. and Reading Coal and Iron Co.,	121,267.07	180,934.16	142,999.12	184 358.05	182 139 07
Bast, ...	Big Mine Run, Schuylkill county, . . .	do. do.	86,462 11	141 435.17	102,089.13	91 785 04	90,160.18
West Brookside, ...	Tower City, Schuylkill county, . . .	do. do.	282,264 00	410,815.09	308 616.04	374,533.00	289 892.02
Bear Valley, ...	Shamokin, Northumberland county, . .	do. do.	75,719.04	98,417.02	53 300.07	73,174 13	69,634.08
Burnside, ...	Carbon Run, Northumberland county,	do. do.	2 685.10	56,462.01	45,758.09	50,918 15	68,048.02
George Fales, ...	Shamokin, Northumberland county, . .	do. do.	5,803 17	3,951.08	1,677.00		
Helfenstein, ...	Helfenstein, Northumberland county, .	do. do.	11.00	6.10	18.10		
Keystone, ...	Locust Dale, ...	do. do.	56,720.16	25,604.09	2,730.10	7,726 17	2 709.06
Merriam, ...	Locust Summit, ...	do. do.	85,500 14	64,345.19	83 098.12	92 589.13	116.771.16
Potts, ...	Locust Dale, ...	do. do.	81 515 14	88 493.04	77,623.03	96 240.11	83 941.05
North Ashland, ...	Dark Corner, Columbia county, ...	do. do.	71 375.15	128.118.11	99.048.15	119,300.08	111,035.16
Preston's, Nos. 1 and 2, .	Girardsville, Schuylkill county, ...	do. do.	80 584 18	93 544 12	41,437 07	63 491 14	68 028 15
Preston, No. 3, ...	do. do.	do. do.	38 600.10	91,278.12	79,356.16	88 576.02	86 078 18
Tunnel, ...	Ashland, Schuylkill county, ...	do. do.	66,296.09	71,413 11	7.10	17,404.03	49,094.17
N. Franklin, Nos. 1 and 2,	Trevorton, ...	do. do.	52 638.17	84,537.14	63,180.05	93,310.10	86 382.11
Reliance, ...	Mount Carmel, Northumberland county,	do. do.	7 602.17	84 866.13	81 634.07	104,964.02	118 840.16
Locust Spring, ...	Locust Gap, Northumberland county, .	do. do.	43,094 05	65 770.02	94,143.07	90,508 03	95,447.17
Locust Run, ...	Ashland, Schuylkill county, . .	do. do.	41 450.03				
Big Mountain, ...	Shamokin, Northumberland county, . .	Patterson & Llewellyn, ...	97,037.86	14 855 06	137,442.11	178,959.06	168,769.15
Excelsior, ...	Excelsior, Northumberland county, .	C. W. Kingsley & Co., ...	76 011.10	67 195.10	104 308.09	142,431 11	125,464 14
Enterprise, ...	do. do. .	Enterprise Coal Company, ...	67,886.10	110 581.03	79,017 08	141 820.11	127,019.17
Locust Gap, ...	Locust Gap, Northumberland county, .	Greaber & Shepp, ...	68 344.18	86,068 05	92,401.18	86 000.00	73,204.15
Henry Clay, ...	Shamokin, Northumberland county, . .	J. Langdon & Co., ...	9 998.01	137,188 07	109,691.03	114,935.03	91,674.18
Pearless, ...	do. do. . .	Cruikshank & Ennis, ...	33 499 15	23 038.10	29,231 11	46,016 03	47 824.18
Sterling, ...	Carbon Run, Northumberland county,	Kendrick & Co., ...	54,082.14	76,545.14	80 930.15	95 636.18	99,389.18
Royal Oak, ...	Shamokin, Northumberland county,	Tillet & Brother, ...	295.00	392.10	2,197.01	4.806 00	3,850.00
Ben Franklin, ...	Douty ville, Northumberland county, .	Douty, Baumgardner & Co., ...	38,622.03	51,604 13	38,411.16	32,158 06	31,006.16
Moultor, ...	Locust Gap, Northumberland county, .	George W. Johns & Brother, ...	95,126.13	110,429.03	119,942 13	126 062 09	131,546 11
Cameron, ...	Shamokin, Northumberland county, . .	Mineral Railroad and Mining Company,	160.194.00	161 403.19	160.853.13	175 655.16	164 596.11
Luke Fidler, ...	do. do.	do. do.	103 964.16	114 654.06	118 643 03	140,291.06	124,973.15
Pennsylvania, ...	Green Ridge, Northumberland county,	do. do.	. .	17,102.04	105 882.13	118 837.00	125 167.01
Hickory Ridge, ...	Hickory Ridge, Northumberland county,	do. do.	21 520.02	.	.	23 311.06	23 640 15
Short Mountain, ...	Wiconisco, Dauphin county, ...	Lykens Valley Coal Company, ...	112.095.09	194,784.00	171 417.05	198,188.17	195,095.10
Williamstown, ...	Williamstown, Dauphin county, . .	Summit Branch Coal Company, . . .	239 239 12	259 889.10	227,169 06	279,790.01	342 218.09
Lancaster, ...	Coal Run, Northumberland county, . .	Smyth & Keyser, ...	8 697.03	13 986.13	14,883.14	30 806 15	22,751.15
Black Diamond, ...	Mount Carmel, Northumberland county,	William Schwenck & Co., ...	19,616.11	13,022.14	26 125.15	7,368 19	21 329 11
Hazel Dell, ...	Centralia, Northumberland county,	Sykes & Jones, ...	. .	.	16 270.06	20,000.00	7 638 01
Mount Carmel, ...	Mount Carmel, Northumberland county,	Montellus, Righter & Co., ...	80.418 15	55.106.16	53.000.00	135,612.14	170,642.18
Big Mine Run, ...	Big Mine Run, Northumberland county,	Jeremiah Taylor & Co., ...	48 715.06	63 303.18	111,683.12	134,525.01	132,362 11
Continental, ...	Centralia, Columbia county, .	Lehigh Valley Coal Company, ...	53 857.17	107 603.00	79,593.00	62 506.06	16,541.17
Buck Ridge, ...	Shamokin, Northumberland county, . .	May, Audenried & Co., ...	46,198.02	77 500.00	53 768.05	30,015.06	66,555.03

Glen Clty,	Glen Clty, Columbia county,	J. H. Losee,	22,430.15	26,762.04	11,128.18		
Carson,	Shamokin, Northumberland county,	M. E. Robinson,	1,430.00	5,185.00	11,460.02	14,416.02	8,070.04
Montana,	Montana, Columbia county,	Miller, Rupp & Weaver,	68.15	118 05			
Franklin, No. 2,	Barry township, Schuylkill county,	William Cleaver & Co.,	9,000 00	14 085.00	8 966.00	29,917.19	23,368.10
Greenback,	Greenback, Northumberland county,	H. J. Tondy,	7,132.12	16,567.08	25,885.03	30,358.08	42,514 15
Brentzill,	Rocktown, Schuylkill county,	Philip Brentzill,		75.00			
Rauch Gap,	Valley View, Schuylkill county,	W. H. Yohe,	453.10	986 00	896.17	1,195 00	1,088.04
Montana, No. 2,	Montana, Columbia county,	A. H. Church,		10,345.18	11.276.19	42,941.06	35,884.01
Pioneer,		David Vaughn & Co.,			2,373.00	958 00	440.00
Shamokin,		George Tibbetts & Co.,			2 197 01		
No name,		Samuel Myers,			70.00		
Centralia,	Centralia, Columbia county,	Louis A. Reilly & Co.,	62,133.10	37,805.00		10,662.02	88 283.00
Logan,	do. do.	do.					231,169.00
Hazel Dell,	do. do.	George Troutman,	6.835.00	13,193.00			
Lilly,	do. do.	do.	7.711.00	2.774 00			
Big Run Gap,	Williams' Valley, Dauphin county,	James Fennel,	1,794 00	2 703.10	2,568 00	2,628.00	2,498.00
Glenn,	Centralia, Columbia county,	Bryson McBriarty,	3,000.00	2,000.00			
Kline,	Montana, Columbia county,	J. L. Kline,	259.15	239.00			
Big Mountain, No. 2,	Mount Carmel, Northumberland county,	Northumberland Coal Company,	592.05		200.00		
Vaughn,	Ashland, Schuylkill county,	D. Vaughn & Co.,	1,532.00	3 838 00	2 373.00		
Little Mine Run,	Centralia, Columbia county,	Piffers & Geraghty,	9.10	23 00			
Gensil,	do. do.	Gulaski Gensil,	245.10	32 00			
Ashland estate,		A. Bancroft,		156.00	24.10		
Bear City,		Martz & Williams,		150.00	413.00	2,450.00	2,000.00
Germantown,		E. H. Herb,		167 00			
West Hazel Dell,	Rocktown, Schuylkill county,	William Piffer,	202.00	117.00			
Centralia outcrop,	Centralia, Columbia county,	James Sykes,		19.00			
Little Diamond,		Donahue & Curran,		156.00			
Packer,	Mount Carmel, Northumberland county,	D. J. Lewis,	5,000.00	370 08			
Franklin,		A. A. Keim,	3,528 07	2,172 02			
Montana, No. 1,	Centralia, Columbia county,	Daniel Beaver,			330.07	73.10	
Morris Ridge,		Isaac May & Co.,				45,507.03	55 490.06
Bellmore,		S. S. Bickel & Co.,					6,805.07
Total shipped to market,			2 816 747.14	3,720,603 16	3 285.216 15	4,181.696.17	4,329,054.00
Consumed or sold at collieries,			253 471.00	95 519 00	176 155.03	250 904 16	259,745.04
Total production,			3,070,218.14	3,816,122.16	3,461,371.18	4,432,601.13	4,588,799.04

LUZERNE AND CARBON COUNTIES.

MIDDLE DISTRICT.

OFFICE OF INSPECTOR OF COAL MINES,
WILKES-BARRE, PA., *March 19, 1883.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

SIR: I have the honor of presenting herewith my third annual report, as provided in the act entitled "An act to provide for the health and safety of persons employed in coal mines," which contains tables enumerating the casualties, both fatal and non-fatal, for the year 1882. Also, information concerning the amount of coal mined at each colliery, number of days in operation, number of each class of employés, together with other important statistics and interesting matters incident to the industry of coal mining.

The total number of accidents was two hundred and fifty-eight, out of which seventy-three proved fatal, leaving thirty-five widows and ninety-one orphans.

The total amount of coal mined, including coal shipped to market, coal sold around the mines, and coal consumed at those mines which do not generate steam with culm, is 7,059,358.28 tons, being an excess over the amount mined in 1881 of 37,849.88 tons.

The amount of coal mined per life lost during 1882, is 96,703.53 tons, against a production of 88,879.85 tons per life lost in the year 1881.

The total number of persons employed in and around the mines, including new collieries in course of preparation, is eighteen thousand three hundred and thirty-nine, showing an increase over the number reported last year of one thousand two hundred and thirty-one persons.

I am pleased to report the mines of this district, at present, generally in excellent condition; but the dangers incident to mining the coal are continually increasing from natural and unavoidable causes, as they approach the deepest basin. The effusion of explosive gases is much more in the deepest workings, and the difficulties of mining with safety is greatly en-

hanced therewith. To meet these difficulties, the best known ventilating apparatus and systems are adopted to ventilate and govern the workings.

A number of new collieries is in course of preparation, two of which were added to the list of shipping collieries during 1882, and there will, at least, seven more be among the producing collieries in 1883, which will increase the coal-producing capacity of this district to a large extent.

Several topics of interest to coal miners are treated at length in this report, which, I hope, will be of some service. I have called attention to the unskillful manner in which injuries of persons are treated before they are removed from the mines to their homes, and quoted some brief instructions as to the best manner of giving prompt aid and alleviation of pains before and during their removal, and until the arrival of a surgeon.

Brief descriptions of all the fatal accidents are given, from which important information can be deduced of interest to those persons directly connected with coal mines.

This I have the honor to submit.

Very respectfully,

GWILYM M. WILLIAMS,

Inspector of Coal Mines.

Total Amount of Coal Mined during the Year 1882.

	Tons.
Lehigh Valley Coal Company,	591,267.07
Lehigh and Wilkes-Barre Coal Company,	1,693,127.03
Delaware and Hudson Canal Company,	1,402,201.15
Susquehanna Coal Company,	904,171.85
Wyoming Valley Coal Company,	397,650.00
Miscellaneous coal companies,	2,070,941.18
Total of all coal companies,	7,059,358.28

Number of Fatal Accidents and Amount of Coal produced per Life lost.

Names of the Companies.	Number of fatal accidents.	Coal mined per life lost—tons.
Lehigh Valley Coal Company,	8	73,908.38
Lehigh and Wilkes-Barre Coal Company,	13	130,240.23
Delaware and Hundson Canal Company,	16	87,637.57
Susquehanna Coal Company,	11	82,197.44
Wyoming Valley Coal Company,	1	397,650.00
Miscellaneous coal companies,	15	138,062.74
New collieries not yet producing coal,	9	
All coal companies,	73	96,703.53

Number of Employees and Tons of Coal mined per Person employed.

NAMES OF THE COMPANIES.	Number of persons employed.	Coal mined per employé—tons.
Lehigh Valley Coal Company,	1,438	411.17
Lehigh and Wilkes-Barre Coal Company,	4,689	361.08
Delaware and Hudson Canal Company,	3,065	457.48
Susquehanna Coal Company,	2,520	358.79
Wyoming Valley Coal Company,	1,059	375.49
Miscellaneous coal companies,	5,112	405.27
All coal companies,	17,883	394.79

There are four hundred and fifty-six persons employed in new shafts which are not included in the above number. The total number employed in the district was eighteen thousand three hundred and thirty-nine all told.

Average number of Days Worked and Tons of Coal mined per Day.

NAMES OF THE COMPANIES.	Average days in operation.	Tons of coal mined per day.
Lehigh Valley Coal Company,	205.22	2,881.1
Lehigh and Wilkes-Barre Coal Company,	207.46	8,161.2
Delaware and Hudson Canal Company,	237.35	5,907.7
Susquehanna Coal Company,	269.98	3,348.6
Wyoming Valley Coal Company,	228.90	1,741.5
Miscellaneous coal companies,	219.52	9,433.9
All coal companies,	228.07	30,952.5

Classification of Fatal and Non-Fatal Accidents for 1882.

CAUSES OF ACCIDENTS.	Number killed.	Number seriously injured.
By explosions of gas,	10	49
By falls of roof and coal,	22	49
By falling down shafts,	4	1
By cars underground,	16	39
By explosions of powder and blasts,	8	12
Miscellaneous causes—inside,	8	18
Miscellaneous causes—outside,	5	17
Total,	73	185

Number of widows, thirty-five; orphans, ninety-one.

TABLE No. 1.—*Showing the number of each class of persons employed, number seriously injured, number fatally injured, per centum of each class injured, killed, and per centum of each class either injured or killed during 1882.*

	Persons Employed Inside of the Mines.						Persons Employed Outside of the Mines.						
	Bosses.	Miners.	Laborers.	All classes of comp'y men.	Drivers and runners.	Door boys.	Bosses.	Mechanics.	Head and platemen.	All company men.	Drivers and runners.	Slate-pickers.	Sinkers and laborers in new shafts.
Number of each class or persons employed,	71	4,228	3,442	1,472	1,792	794	62	418	465	1,628	243	3,268	456
Number seriously injured,	1	80	32	15	26	9	1	3	1	8	1	4	4
Number fatally injured,	1	23	16	6	10	3	. . .	. .	. . . .	1	. .	4	9
Per centum injured,	1.40	1.89	0.92	1.01	1.45	1.13	1.61	0.71	0.21	0.49	0.41	0.12	0 87
Per centum killed,	1.40	0.54	0.46	0.40	0.55	0.37	None.	None.	None.	0.06	None.	0.12	1.97
Per cent. either injured or killed,	2.81	2.43	1.39	1.42	2.00	1.51	1.61	0.71	0.21	0.55	0.41	0.24	2.85

TABLE No 2.—*Showing the number of persons of different nationalities seriously and fatally injured in the Wilkes-Barre District during 1882.*

Nature of Injury.	American.	English.	Welsh.	Scotch.	Irish.	Polish.	Swede.	Hungarian.	German.	Unknown.	Total.
Seriously injured,	24	20	48	None.	62	9	6	2	12	2	185
Fatally injured,	12	13	15	2	21	7	None.	None.	3	None.	73
Total seriously and fatally injured,	36	33	63	2	83	16	6	2	15	2	258

The Present Condition of the Mines.

On visiting the different collieries and noting the changes continually effected in the manner of working them, it is gratifying to see so much attention given towards improving their condition, with a view of insuring higher degree of safety for the workmen, as well as to the property of the companies operating them. When we compare the condition of the anthracite coal mines at present to what it was twelve years ago, when the mine ventilation law was enacted, we observe that vast improvements have been made, not only in their ventilation, but in all the practical parts of the perilous industry of coal mining. This progressive spirit permeates this whole district to some extent, but its progress is far more perceptible in the gaseous collieries, than in those in which no explosive gas or fire-damp is evolved. The presence of fire-damp, undoubtedly, is an effective stimulator to the ingenuity of foremen who have to deal with it, and sets all their faculties at work devising means of avoiding accidents while subduing the manifold difficulties arising from its presence. To be successful in this, every part of a colliery must be kept in good order. As long as the desired quantity of coal can be brought out from the collieries where no fire-damp is evolved, the operator sees not the errors and indifference of his foreman to the sanitary condition of the mine, for there is no tell-tale. But should an explosion occur, then all would awake to the fact that something was wrong, and a closer attention to the various branches of the work needed.

I do not wish to convey the impression that all the mines which generate no fire-damp are improperly governed, for that would be wrong and unjust. Some of this class of collieries are kept in good condition, and of which I have no fault to relate. But of those mines where the fans are kept running at their maximum speed, producing a large volume of ventilation at the intake and outlet, and not one fourth of that found in the face of the workings where it is needed, there is certainly good reason to complain and find fault with the management. Again, where we find small air-ways, narrow gangways, loose rocks and rubbish along side of rail-tracks, props too close to the roads, and all such conditions which are frequently the cause of serious injuries to employés, there are good reasons to complain, and invariably this condition of affairs exists only through the inattention and careless neglect of the mining bosses.

The increasing dangers and difficulties attending the advancement of the mines towards the deep basins, owing to the effusion of a large volume of carbureted hydrogen or fire-damp, have already developed the necessity of adopting the most approved apparatus for producing the largest possible quantity of ventilation, as well as the best methods that can be devised pertaining to the system of working the collieries, and especially to guide the ventilation through the workings in an economical and efficient manner. In nearly all the new mines recently opened, the inlets and outlets are made much larger than usual, having an area of section varying from one hun-

dred to one hundred and seventy-five square feet. An outlet of the size stipulated by the mine law would now be considered ridiculously small, and insufficient for the smallest and most insignificant colliery in this district. During later years the laws governing the science of mine ventilation are more generally studied by the officers and foremen of the mines, and this, accompanied by practical demonstrations of the large increase in the aggregate quantity of air obtained by having large inlets and outlets, has resulted in adopting them at nearly all the new mines lately opened.

In conducting the air-currents through the workings, the approved system of splitting them into separate streams is not done to the extent to which it could be done with good effect, only in a few of the collieries; and I am positively convinced, that the ventilation of many of the mines would be yet much improved if the air-currents were more extensively divided into separate splits than they are at present. Less number of doors would be needed, and a more reliable system of ventilation established, which would result in giving a purer and healthier atmosphere for the men to work in.

In some of the mines which, perhaps, I better not name, the mining bosses are not particular, and seem to be heedless of the importance of conducting the ventilation through the face of the chambers. The check-doors are too far apart and frequently left standing open, having no attendants to watch them and keep them properly closed. In going around these mines I have seen the faces of chambers full of powder smoke, the poisonous products of burning lamps, and other noxious gases wherein the miners had to work, while plenty of pure air was flowing outward upon the gangway and could easily be directed to sweep the face of the chambers, provided the boss had any inclination to do so. After taking pains to bring the air-currents on to the face of the gangways, it is sheer carelessness and a shameful disregard for the comfort and health of their fellow-beings who have to work all day in the chambers, to allow the air to return again without giving them the full benefit of it. Yet it is difficult to convince the bosses who are practicing this glaring neglect to see it in its proper light and adopt better measures.

The Advantages of Splitting the Air-Currents Demonstrated.

During the afternoon of May 27th, 1882, while the mines were not in operation, a series of interesting tests were made with the Hollenback and Diamond fans of the Lehigh and Wilkes-Barre Coal Company, the result of which, indeed, proved marvelous. They were made by W. T. Smyth, inside superintendent of Charles Parrish & Co., Joseph Weir and David Jonathan, mine bosses of the Hollenback and Diamond mines, assisted by the fire-bosses of these mines, and witnessed by the writer. The fans are both located upon a large shaft, midway between the collieries. The shaft is divided into two compartments by an air-tight wooden partition, and is virtually two separate air shafts. At the bottom of one compartment the return air-way of the Hollenback mine is connected, over which, on the top

of the shaft, a fan thirty-five feet diameter is located to ventilate a part of the Hollenback workings.

At the bottom of the other compartment the return air-way of the Diamond mine is connected, over which a fan twenty-four feet diameter is located to ventilate the Diamond workings. By a very convenient arrangement, specially provided for that purpose, either of the fans can be applied to ventilate both colleries at once. A large slide-door is adjusted in the partition separating the two shafts, which can be opened in two or three minutes by crank attachments, and thereby throw both shafts open to either fan. Both fans can also be shut off, by doors placed between them and the shaft, so, that if one should become crippled, it could be shut off, and the other applied to exhaust the air from both mines. In both these mines explosive gases are evolved in enormously large quantities, requiring large quantities of air to dilute them so as to ensure perfect safety. Owing to this the fan could not be stopped, only for short intervals; and the measurements had to be taken in the faint light of safely-lamps. The Diamond fan, twenty-five feet diameter, running at a velocity of sixty-one revolutions, raising the water-gauge to one and six tenths inches, was exhausting a volume of air equal to 165,300 cubic feet per minute; while having the Diamond mine alone to ventilate from. But when this fan was applied to ventilate both mines at once, and the other fan shut off, a velocity of sixty-five revolutions, and a water-gauge equal to one and five tenths inches exhausted 308,800 cubic feet per minute. In other words, while having only one colliery to ventilate, a pressure of 8.32 pounds per square foot propelled a current of air equal to 165,300 cubic feet per minute; while a pressure of 7.80 pounds propelled 308,800 cubic feet per minute, by having the airways of both mines free for its approach to the fan.

This was a marvelous showing, surprising all who were witnesses of the fact; and, to verify the case, similar trials were effected with the other fan. This fan, being thirty-five feet diameter, and ventilating the Hollenback mine alone, running forty-two revolutions per minute, raising the water-gauge to one and seven-tenths inches, exhausted 138,125 cubic feet per minute of air; but, when applied to ventilate both mines at once, running forty-four revolutions, and a water-gauge of one and eight tenths inches, the quantity of air exhausted was 325,000 cubic feet per minute; proving that a pressure of 8.84 lbs. per square foot would propel only 138,125 cubic feet of air through the airways of only one colliery, while a pressure of 9.36 lbs. would propel 325,000 cubic feet, by throwing the airways of both collieries open for its approach to the fan. These remarkable results were truly amazing; but, nevertheless, they were indisputable facts, and proves, beyond a doubt, the great advantage gained in the quantity of air circulated through a mine by splitting the air currents. It would have been more satisfactory if the velocities of the fans could have been rated, so as to indicate the same water-gauge at each trial; but it was very difficult to effect this in the limited time at our command, where we were threatened

by accumulating fire-damp. However, the comparative pressures were close enough to answer our purpose in proving the advantage gained by splitting the air currents and providing large air-ways. The reader will observe that, with a fixed pressure or water-gauge, more air would be circulated through the Diamond than through the Hollenback workings, showing that the resistance to its passage through the workings was greater in the latter. If both fans were set to run at a speed indicating a certain height of water-gauge, while ventilating their respective mines, the quantity of air exhausted would be no more than when only one fan was running, having both mines open to ventilate from, provided this fan was running so as to raise the same water-gauge. The difference would be in the quantity circulated through each mine, owing to the difference in the resistance met with. In the Hollenback the current would be least, while it would be most in the Diamond, having freer passage in the latter. This was conclusively proved in these tests, and valuable lessons can be learned from them, which might be serviceable to interested persons in the future.

Another suggestive fact was proven in these tests, viz: that the fan indicated nearly the same pressure on the water-gauge while running at a certain velocity, whether it had the one or the two collieries to ventilate from, but it required more steam to run it at this velocity, when both mines were connected, owing to the increased volume of air it had to throw out. In order to place the result of these tests in a clear manner for the reader, they are presented in the following tabulated form:

The Diamond fan.—Diameter, twenty-four feet.

VENTILATING THE	Revolutions of fan.	Water gauge—inches.	Quantity of air exhausted.	Quantity of air exhausted per revolution of fan.	Horse-power.
Diamond mine only, . . .	61	1.6	165.300	2 709.8	41.67
Diamond and Hollenback,	55	1.5	308,800	4,750.7	72.08

The Hollenback fan.—Diameter, thirty-five feet.

VENTILATING THE	Revolutions of fan.	Water gauge—inches.	Quantity of air exhausted.	Quantity of air exhausted per revolution of fan.	Horse-power.
Hollenback mine only,	42	1.7	138.125	3,288 6	37.00
Hollenback and Diamond,	44	1.8	325,000	7,386	92.18

At the Prospect Colliery, Lehigh Valley Coal Company, another gaseous mine where large volumes of air must be suppl ed in order to dilute the fire-damp to a non-explosive condition, the benefit deriving from splitting the air currents has been amply demonstrated. There are two shafts at this colliery, viz: the Prospect and Oakwood, the latter constituting the second opening to the former, and both are used to hoist coal. They are

also connected together underground, at several points, and are ventilated by two fans, located one at each shaft; and both fans are of the same dimensions, and thirty feet diameter. When the Prospect fan was started, there were four splits of air currents in the mine, and with a pressure equal to $1\frac{1}{4}$ inches water-gauge, it exhausted 125,240 cubic feet of air per minute. Mr. W. Samuel, the mining boss, believing that better ventilation could be obtained by enlarging the outlet, and splitting the currents into more splits, had the outlet enlarged so as to include forty square feet more area, and divided the air currents into eight separate splits, and was highly gratified at the good results following these improvements. The ventilation was increased 170,000 cubic feet per minute, with a pressure of $\frac{1}{8}$ inch less water-gauge or a total water-gauge of $1\frac{1}{8}$ inches. At the Oakwood shaft, where the other fan was located, the same system of improvements was inaugurated with still better result. The ventilation was increased from about 75,000 cubic feet per minute to 210,400 cubic feet by enlarging the airways, and splitting the four currents they formerly had, into ten separate splits. Thus it is amply demonstrated that by having large airways, and dividing the various currents into quantities which can pass through the workings at low velocities, much greater ventilation is obtained from the same pressure than would be if the conditions were contrary to this. I could enumerate other cases where the advantages of splitting the air current has been well developed and proven a great benefit to the safety and healthy condition of the coal mines of this district; but this shall suffice at present, trusting it sufficient to convince all practical persons of the good results emanating from a judicious system of splitting the air currents.

FIRE IN THE NO. 1 SHAFT, NANTICOKE.

Susquehanna Coal Company.

Of all the perilous situations encountered in the dangerous industry of coal-mining, the prevalence of a fire in a gaseous mine is, I believe, mostly dreaded. When such a misfortune occurs no one can estimate the cost nor the trouble it may cause before it can be distinguished. At the above mine, in the Hillman vein gangway, a fire raged for several weeks against all the force that could be applied to extinguish it. About eight o'clock, A. M., January 24, one of the coldest mornings of that winter, a miner fired a shot in the face of the west gangway, which ignited the gas-blowers and set them on fire. The gas was unusually strong, producing a flame so large that it filled the gangway for several feet back from the face. This did not alarm the miner, for it was only a repetition of what had occurred after nearly every shot fired since he was working in that gangway. He had been able to extinguish it each time with but little trouble, and would have succeeded, perhaps, this time if the water had not been frozen in the pipe somewhere in the shaft, and failed to run when he applied the hose for that purpose. The water flowed slowly for two or three seconds and then stopped; and against all efforts made to stop the progress of the burning flames,

PLAN OF

Section of No. 1 Shaft workings, Susquehanna Coal Co., Nanticoke, Pa., showing location of the fire and where Samuel Morris, Wm. M. Hughes and John Davies were suffocated Jan. 23, 1882.

REFERENCES.

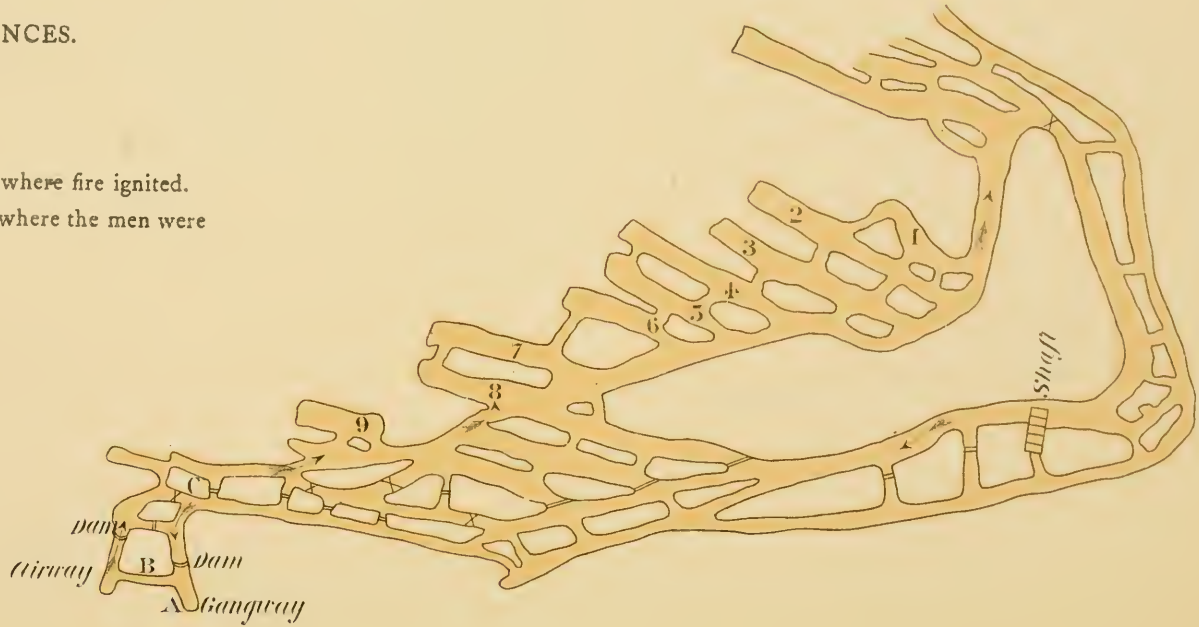
= Air Stoppings.

× Mine Doors.

⌒ Dams.

A Face of gangway where fire ignited.

4, 5 & 6, Chambers where the men were suffocated.



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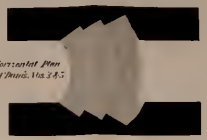
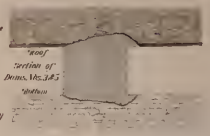
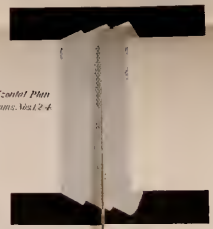
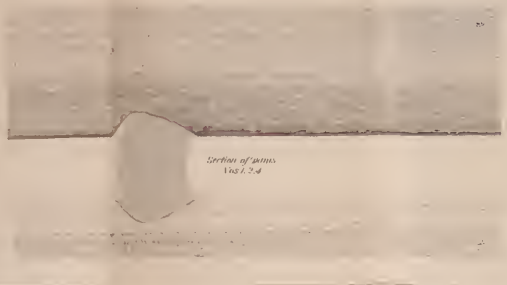
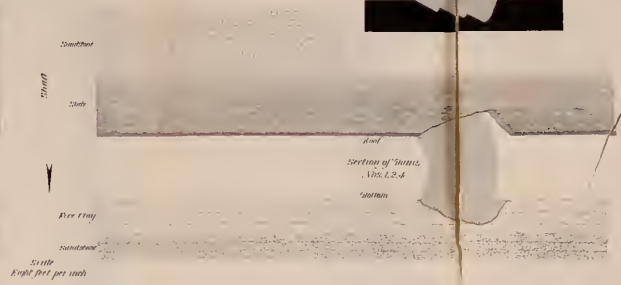










the timber and brattice took fire, and conveyed the flames back to the cross-heading B, (see map,) and up to the airway as far back as C. During the progress of the fire, its poisonous products were conveyed by the air-current into the chambers 1, 2, 3, etc., where a number of men were employed, and three of whom were suffocated while trying to escape into a point where pure air could be obtained. (For a detailed description of this accident see another part of this report.) By the time the frozen pipes were thawed, and the bursted ones renewed so as to convey the water again, the timber were burned along the course of the fire, leaving the roof, which consisted of a thick bed of fire-clay, fall to a height of several feet above the coal vein; and thus the situation was complicated to an alarming extent. The burning timber, accompanied by flaming gases raging through this mass of loose material, proved very obstinate to extinguish; and they utterly failed to make any progress to that effect with water applied directly from the hose. A dam was then erected across the gangway a little distance outside of the inner cross-cut, (see map.) and this held the water until it finally covered the loose material and extinguished the fire in the gangway. The airway was on higher ground; and the roof, having fallen from the face to the point marked C, on map, a distance of one hundred and fifty feet, they entered through the second cross-heading, through which the air-current was also now passing, and discovered the face of the airway burning furiously. With great difficulty, amid great dangers, a place was cleared to erect another dam across the airway a few feet inside of the second cross-cut. The frequent explosions of fire-damp, and the continuous falling of the roof, made this task of building a dam at that point extremely perilous, but they succeeded in raising it so as to hold water enough to cover the loose material. Just as they were getting ready to apply the hose to the burning gases over the surface of the water, the pump upon which they were depending for water supply gave out, and they had to abandon their work for several hours, waiting for the pump to be repaired again. When this was done, and the men returned, the aspect of the place was truly discouraging. The fire had extended over the dam as far back as C, and gone across into D, and had brought the roof down all along to a height of above twelve feet, and all this was on fire and burning furiously. The heated air and steam had also caused the roof to fall, blocking the return airway, so as to make it impossible to force sufficient air forward to dilute the gases to a non-explosive and respirable condition. The superintendent, George T. Morgan, and several of the mine-bosses had been working almost constantly since the fire begun, and were now completely exhausted and needing rest. Mr. Rossell, general superintendent, and Mr. Bowden, chief mining engineer of the company, were also present to render any assistance which they could in the matter. At this juncture Mr. T. M. Williams, ex-mine inspector of this district, was engaged to assist in the supervision of the work. Three more pumps were added to supply water, and the men were divided into relays under the

charge and direction of their respective officers, and the difficult work was now attacked in a more systematic manner. Hundreds of car-loads of the burning material were sent out, and the roof was gradually and safely secured with timber amid indescribable dangers, until, finally, the fire was again driven back behind the dam, where it was soon after extinguished to the great relief of all concerned. While this was progressing four pipes were constantly plying water with high pressure upon the fire. The men had to work almost knee-deep in hot water in an atmosphere impregnated with steam and irrespirable gases, and explosions frequently recurring, but their indomitable courage did not lag until their work was crowned with success February 20. It is remarkable and highly commendable to the careful managers of the work that no serious accident occurred to any of the men while this hazardous work was being effected.

Fire in the Diamond Shaft, Lehigh and Wilkes-Barre Coal Company.

A miner was driving a cross-cut from the airway of the fourth lift, in this mine, to the gangway, and had it driven about twelve yards, and was nearly through to the gangway, when the blowers took fire from a naked lamp hanging on the brattice. For several months prior to this date, (June 16, 1882,) gas was emitted very freely in the gangway and airway, and to avoid setting fire to it, they were using dynamite to blast the coal with, and were forbidden naked light nearer to the face than the cross-cut, where the air was passing across into the gangway. The coal was very dry and dusty, and the gauze of the safety-lamps would become filled with dust quickly, so that no light would be emitted through them. Thus the miner was induced to hang his naked lamp upon the brattice, back several feet from the face, so he could have light to work. There was no standing gas, for the brattice was leading the air current on to the face, and up the cross-heading which was, as stated before, nearly through to the gangway. The floating dust was so dense that, it is supposed, the fire from the lamp was communicated by it to the blowers in the lowest rib, igniting them. A pipe was already laid, conveying water from the surface to the gangway, ready for such emergency; but when it was applied the hose burst. A second and third hose was tried with the same result, and when a new length was obtained which could stand the pressure, the water was, for some unknown cause, stopped outside; and in the meantime the brattice took fire and burned away. A large force of men was soon on hand, and fought the fire back to the face, confining it to the lowest corner of the airway, where a pile of loose coal was on fire. The fire-damp accumulated in the unfinished cross-heading and exploded several times during the night. About 8 o'clock, A. M., June 17, a new gang of men went to work, relieving the night men. At this time they thought the fire was extinguished, and they were pouring water upon the coal to cool it. The cross-heading was full of fire damp, and when they began to stir the loose coal, a flame darted up and ignited it, when a severe explosion occurred, burning six men. These were immediately taken home, while the remainder went to work

again. A few minutes later another explosion occurred, burning two more men, and now, for the want of hands, the work had to be suspended. Mr. W. T. Smyth, inside superintendent, and Mr. D. Jonathan, mining boss, had been constantly present since they first learned of the existence of a fire. The former went out to look for more men and report the situation to the authorities, while the latter went to breakfast, leaving two fire-bosses to watch the airways and keep the ventilation forward. I went into the mine at this time, having heard of the trouble—met Mr. Jonathan, and learned from him the situation. When about midway into the airway, another explosion occurred, and soon after I met two young men running out, minus hats, having been thoroughly frightened, and had concluded to run home. I ran forward and found the fire-bosses replacing a door on a section-branch, six hundred feet back from the face. The door had just been torn off, for the fourth or fifth time, by the force of the explosions. There were several chambers on the gangway inside of this point, and from what could be surmised, all the check-doors were blown away; and several stoppings were torn from the cross-cuts. While conversing together on the situation, another explosion occurred, driving the air with terrific force, and blowing us all off our feet, rolling along the airway. These explosions occurred every fifteen or twenty minutes, and tore the doors and every movable thing into useless fragments. We saw that we could accomplish nothing by staying there, and that, probably, the next explosion would be stronger and cause our death if we should remain, for they were increasing in force every time. So a piece of canvas was fixed across the section again in place of the door, to send the air forward and give us time to escape; then we went out. When gone about three hundred feet, another explosion occurred; but it only blew our lights out, for we were much further off. We struck light, and went on, without further delay, to the slope about six thousand feet from the seat of the fire. A messenger was at once sent to inform the authorities of the situation; and they, after learning the condition of affairs, concluded to flood that portion of the mine; consequently, water was turned in from all available points at once. The explosions recurred at regular intervals, for nearly a week and, finally, the air-bridges and doors were torn by their force, so that the air was not conducted to the region of the fire, and the explosions ceased when the water submerged that portion of the mine. They went to work in the upper workings and are shipping coal regularly since that time.

The Methods hitherto Adopted for Extinguishing Fires in Coal Mines.

It is evident that the gaseous coal mines of this district will, in the future as in the past, occasionally be exposed to destructive underground fires; and, although precaution is already taken, by introducing the best appliances hitherto discovered for the prevention of fires, where there is so much combustible material and so much blasting powder used in contact with strong gas-blowers, fires will inevitably occur. The great danger to life

and property attending them should stimulate every effort to discover the most effective means of extinguishing fires in all kinds of localities, and under the variable circumstances in which they are liable to take place. In the mines where fire-damp is emitted in large volumes, water pipes have been laid, conveying water from the surface to convenient points near the face of the workings, having valves to prevent it running when not wanted, and several lengths of hose and nozzles are kept constantly on hand, ready to apply it when needed. The most successful manner of applying water is to get the appliances ready immediately when the blowers ignite; then, wait until the surface of the surrounding walls gets nearly red hot, when the water is dashed against the hot walls and instantly converted into steam, filling the whole space around the flaming gas, cutting off the supply of air, and the fire-cases, having no oxygen to supply further combustion. At the same time the wood-work must be watched and prevented from taking fire by plying the water continually on it, keeping its surface constantly saturated. This plan has been practiced for several years in this district, and has undoubtedly obviated many disastrous fires.

In some of the coal mines of England, Wales, and Nova Scotia, burning gas-blowers have been frequently extinguished by the concussion of shots fired from small brass cannons kept on hand for that purpose; and when no cannon was convenient, old car wheels, and, in one instance, I read of a blacksmith's anvil being improvised for this purpose, and produing the desired effect. At one colliery in England where an unusually large blower of gas was on fire, it was extinguished by exploding twelve pounds of powder on the gangway, close to the seat of the fire. And in the No. 4 slope, Nanticoke, of this district, a burning blower was extinguished, this year, by exploding a cartridge of dynamite placed in a small pool of water close to the seat of the fire. Thus it will be seen that there are many ways by the application of which an ingeneous foreman may be able to extinguish the burning gas-blowers in coal mines. But it is evident to those who have had experience with mine fires that, while these applications may be effective in extinguishing flaming gas-blowers they will not produce the desired effect when coal and wood is on fire, burning at a temperature that will reproduce flames as soon as they are extinguished; and in all such cases some other plan must be adopted.

Fortunately, the ingredients which combine, causing spontaneous combustion, do not seemingly exist in our anthracite coal mines; and our troublesome fires do not arise from that source, but generally originate in the accidental ignition of wood or fire-damp; frequently, the latter igniting from blasts which have to be fired, and cannot be avoided. Dynamite, or rend-rock powder, is occasionally used for blasting purposes in fiery gangways, because it does not ignite the gas so readily as common powder; but there was one instance in this district where the discharge of dynamite blasts exploded the fire-damp with fatal effects during the last

year, which proves that even using this explosive cannot be relied on as a certain preventive of fires from blasting.

When the coal and wood take fire in a coal mine, the manifold dangers and complicating situations arising from the falling roof and accumulation of explosive gases, caused by the effects of heat upon the superincumbent rocks and the ventilation, make it an extremely perilous and difficult task to contend with successfully. And when a fire has arrived at this point, and become too dangerous for men to work in its vicinity, various methods have been adopted, with more or less success, to accomplish the desired result of putting it out. In many instances through England and Wales, and, probably, some in this country, we could cite cases where standing mine-fires were extinguished by having them built off with air-tight walls, and thus cut off the supply of oxygen, and, in time, the fire converts all the oxygen of the inclosed air into carbonic acid, and the fire is finally extinguished. Although this plan has been successful to extinguish fires in a large number of instances, and is regarded by many practical men as the best method yet discovered for dealing with fires which ignite spontaneously in old workings, and where explosive gases prevail in dangerous quantities, it has also failed in many cases after a trial of several years. There are two cases in this district where fires have been inclosed by walls for the last eight years, and yet it is evident that they are not extinguished, or, at least, a very high temperature is retained, and steam can be seen arising from the earth over the places constantly. Many cases could be cited where mine-fires have been inclosed with substantial brick walls for various periods of time, and, upon re-opening them and admitting air, the fire rekindled, and burned as vividly as ever.

Undoubtedly, were it possible to absolutely prevent the admission of any air, the fire would cease after consuming the inclosed oxygen; but the heat may be retained at a temperature high enough to re-ignite it instantly upon the re-admission of air. The great difficulty is to cool the place below the temperature of ignition.

Nicholas Wood, Esquire, cited a case before the committee appointed by the English Parliament, in 1849, to inquire into the best means of preventing accidents in coal mines, where a mine-fire was extinguished at the Killingworth colliery by throwing its own smoke upon the flame. It was a dangerous place in a long drift. At the extremity there was a blower of gas, and the coal got on fire about half way along it, which set the brattice and timber on fire. The gas accumulating beyond it would, at a certain period, have exploded, and, by the way of getting it out as quickly as possible (it was a dangerous experiment), the air-current was reversed, and the smoke thrown back upon the flame, and extinguished it. As stated by Mr. Wood, this was a very dangerous experiment, and should never be resorted to, unless the situation is thoroughly understood and the probability of an explosion averted.

It is claimed, in some circles, that a fire can be extinguished by intro-

ducing high pressure steam into an inclosed fire district, but I have not come across the history of one authenticated case where this method of extinguishing fires has been successful, and where it can be proven that introducing steam in that manner has been of any decided benefit; but, on the other hand, there are instances within my knowledge where this procedure has no effect whatever upon fires, unless an injurious effect. It is a fact well known, that the blacksmiths, by wetting the coal with water, obtain hotter fires. Another fact, now daily demonstrated at the mines, is that by blowing steam through the fires under steam boilers greater heat is abtained.

Well, is it not probable that steam, when blown upon the hot coals of a mine-fire, is decomposed into its dissociated elements, and thereby furnishing the means of retaining or prolonging the combustion? Water is composed of eight parts oxygen and one hydrogen, by weight, or two hydrogen and one oxygen by volume; and every pound of it decomposed furnishes from ten to twelve cubic feet of oxygen, and from twenty to twenty-four cubic feet of hydrogen, varying according to pressure and temperature. In combining these elements produce the hottest flame extant, and I must confess that it appears to me improbable that the application of steam in this way can be effective in extinguishing mine fires. It is, also, generally introduced at a pressure of from fifty to sixty pounds per square inch; at which it has a temperature of about 295°, and thus it cannot be expected to contribute any towards cooling the place below this temperature.

Goldsworthy Gurney, Esq., introduced, for the first time, his apparatus for producing carbonic acid and nitrogen, and applying them for the purpose of extinguishing fires in the Astley colliery, near Manchester, England, April, 1849, and was successful. The shaft was three hundred and ninety feet deep; and the fire originated about three hundred feet away from the foot of the shaft, and the vein was only four feet thick. It ignited on Monday, April 2, 1849, and after fighting it for two weeks with no effect, Mr. Gurney was sent for; and he, immediately upon his arrival at the scene, went to work and built a furnace to manufacture carbonic acid and nitrogen; and, applying a steam jet to force these gases into the mine, was successful in extinguishing the fire in a very short time. A plan of the apparatus used is herewith furnished, and the following interesting letter, written by John Darlington, Esq., proprietor of the colliery, gives full description of the process and its admirable effects, published in the London *Times*, April 30, 1849.

A Coal Mine on Fire.

To the Editor of The Times:

SIR: The following successful result of an experiment, made to put out a fire in a coal mine, is so important that I feel a statement of the particulars will be interesting to your readers. On Monday morning, the 2d instant, one of my coal mines at Astley was discovered to be on fire, and had spread to such an alarming extent as to prevent all access by the usual

shafts. We immediately put out all the fires about the works, and requested the cottagers in the neighborhood to do the same, for fear of an explosion. The plan of procedure in such cases, (which happen more frequently than those unacquainted with collieries suppose,) is, first to stop down all openings into the mine, so as to prevent any access to the atmosphere. If, after some time, the fire is found not extinguished, the only alternative is to fill the mine with water from some source in the neighborhood. In the absence of a sufficient reservoir of water, the pumps are stopped and the water allowed to accumulate from the natural drainings, generally an unsatisfactory and slow process. In the former plan, notwithstanding every precaution is taken in sealing the shafts, it is found by experience that air in small quantities will be drawn through the stoppings and fissures of the earth sufficient to keep up a slow rate of combustion for a very long period. We have proof of this in many cases occurring in this neighborhood. In the extensive collieries worked by Lord Bradford, at Bolton, the mine has been on fire nearly two years; when the fire happened it was sealed up for some months, but on opening it the fire was still found burning. The pits were again immediately sealed up, and left to remain for twice the former period; on opening the mine at this time the fire burst out as before. It was again closed, and so remains to this day. At the collieries of the Earl of Ellesmere, at Worsley, one of the mines took fire about the same time; it was treated in the same way; it is still on fire, and at this moment his lordship is about to turn in the Bridgewater canal.

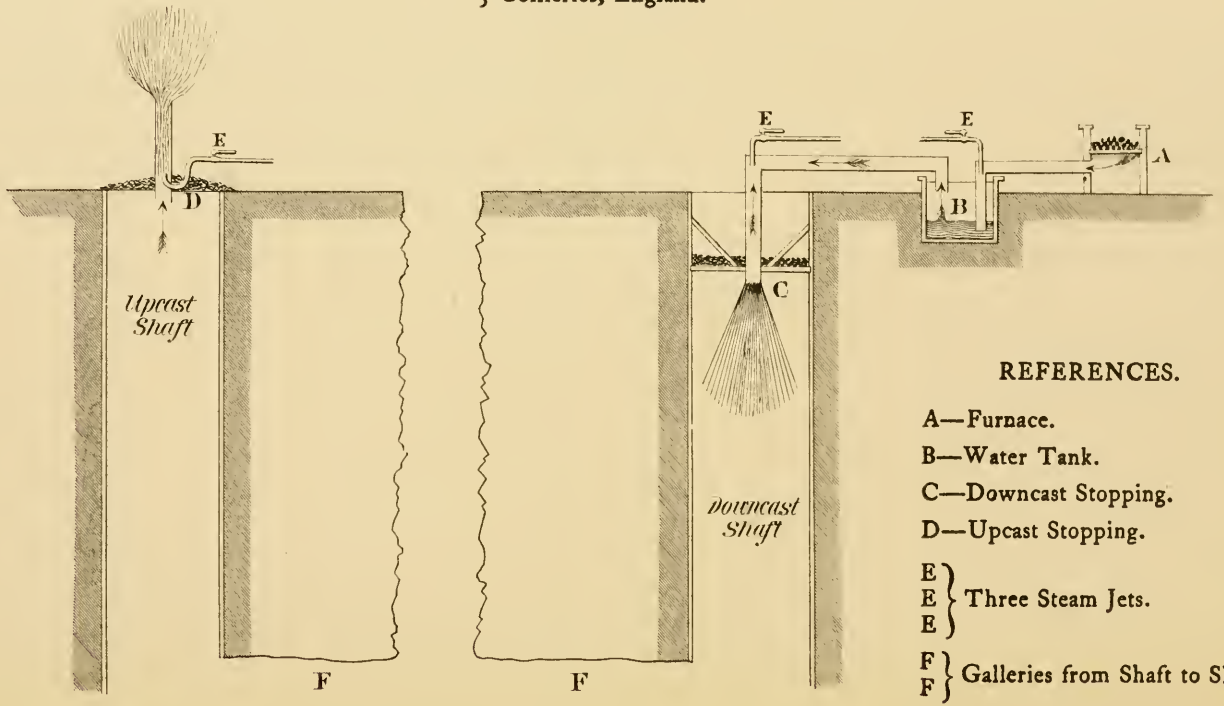
In the Patricroft colliery, the deepest mine in this country, a fire broke out in the upper part of the workings which baffled every attempt to extinguish it, and it is now stopped up and abandoned. At Mr. Blundell's colliery, at Blackrod, in this district, the pits were opened after being closed some weeks on account of fire, when a fearful explosion took place, and did considerable mischief to the workings. The fire burned with greater intensity than ever; the flames rose out of the mines and set fire to the headgear, and burned so fiercely within the pit that it actually melted the iron tram-wheels. In this case, the river Douglass was eventually turned into the workings, so as to fill them with water. I could mention several other cases in this immediate neighborhood to show the importance of the question before us, and the difficulties we have to contend with when these unfortunate accidents occur. In our case we instantly sealed up the mine, yet fire-damp issued from every crevice about the stoppings, and through orifices in the earth, in such quantities that the safety-lamps would take fire at a considerable distance. In this state of things I wrote to Mr. Goldworthy Gurney, whose application of high-pressure steam to ventilation of coal mines is exciting so much interest, stating the case, and asking if he could point out any plan of high-pressure steam exhaustion, or otherwise, likely to be of service. Mr. Gurney immediately came down, and after well investigating the conditions, in consultation with us, proposed to fill the mine with carbonic acid, nitrogen, or some other extinguishing or

incombustible gas. This, at first, appeared to us impracticable, and the immense quantity required to fill the galleries and lateral working, together above three miles in length, too expensive, if it were possible to obtain it, to warrant the proposition. He, however, soon set us right. He said nitrogen, or azote, might be obtained from the winds of heaven, and carbonic acid from the coals lying waste about the pit, assisted by a little charcoal and lime; air would be deprived of its oxygen by being passed through burning charcoal, coke, and small coal, and the nitrogen set free. In short, the product of this combustion would be the choke or black-damp known in mines. We immediately built a furnace of brick work four feet square, at a safe distance from the down-cast shaft. To the ash-pit, in every other respect made tight, an iron cylinder thirteen inches in diameter was connected, and made to terminate in an elbow under water in a close tank partly filled; with the upper part of this tank, above water, another pipe was connected and carried through the stopping of the down-cast pit. A powerful steam-jet was made to work between the furnace and the tank, which drew the air down through the fire, and forced it through the water; a second jet was placed in the cylinder at the top of the down-cast shaft, and made to draw the choke-damp from the tank and force it into the pit. At the other, or upcast shaft, we placed a jet in a cylinder through the stopping, and made to exhaust from the shaft beneath, so as to assist the compressing jets, and draw the choke-damp through the galleries between them. (See plan.) The apparatus fitted, as soon as the fire burned up, was set in action. In order to test the effect of the choke-damp, we placed some burning tow, moistened with spirits of turpentine, into it The flame was instantly extinguished as if placed in water. It was thus tested in the cylinder as it passed from the ash-pit, before coming to the jet; also, in the tank and second cylinder with similar results. This was conclusive evidence of the perfect formation of the choke-damp.

In about two hours after the jets were set in action, fire-damp disappeared from the shaft, and we observed a slight cloudy appearance in the escapage from the up-cast shaft. It had the sulphurous smell of choke-damp which pervaded the air to a considerable distance. A safety-lamp was now brought and placed in the upper cylinder; it became instantly extinguished, as if put in water. For this purpose the draughts were momentarily shut off. A bright burning fire of charcoal, in a chafing dish, was placed in the escapage at the cylinder, and was also immediately extinguished. The facts satisfied us that the choke-damp had passed through the mine. The period of its appearance agreed with our calculations. The quantity of choke-damp forced through the mine was about 6,000 cubic feet per minute, and this would fill the galleries in about that time. The choke-damp was allowed to remain for several hours, at the termination of which we were convinced that all fire, however intense, must be extinguished in the mine. The connection with the furnace was now broken and fresh air driven through by the same jets. In about two hours the choke-damp dis-

APPARATUS FOR PUTTING OUT A FIRE IN A COAL MINE.

Adapted by Goldsworthy Gurney, Esq., at J. Darlington, Esq'rs
5 Collieries, England.



REFERENCES.

A—Furnace.
B—Water Tank.
C—Downcast Stopping.
D—Upcast Stopping.
E, E, E } Three Steam Jets.
F, F } Galleries from Shaft to Shaft.

appeared; this was shown by a safety-lamp burning clearly in the escapage, in the cylinder at the upcast shaft. We regarded the mine now as perfectly safe. With several men I descended the downcast shaft, 390 feet deep, to the tunnel leading to the workings. We found all clear. The exhausting jet was kept up, drawing fresh air through the mine all night. The next day several men went down, and passed through the workings, and found all clear and safe. Their report was particularly favorable. In no part of the mine could they perceive any fire, and the action of the single jet in the upcast is described by them as passing a current with greater speed than the furnace (which is pronounced to be the most effectual one in the county) had ever before done in this or any other of the mines of which I am the proprietor. This result has occasioned the greatest interest in our neighborhood. Never was an experiment more successful, a gigantic power under such complete control, fighting with the elements, and, as it were, compelling them to destroy each other. In all the progressive stages of coal-mining, but more particularly of the present time, when we find that, by the ingenuity of scientific developments, it has become one of the most prodigal sources of wealth, not only to the capitalist, but to the laboring artisan, the uncertain value of mineral property has invariably thwarted and repulsed the enterprise of the nation. To-day we may have a remunerative adventure, watched over by the genius of revealed theory and practice; while to-morrow may discover it has become the element of wholesale destruction to life, or a wreck of private hazard and national wealth. This experiment goes far to remove the impending danger, and render those difficulties, which hitherto have been insuperable, easy to overcome, and at so trifling a cost as to be within the reach of the smallest capitalist. The simplicity of the experiment is only exceeded by its novelty, and its success is unquestionably the most perfect that any single demonstration could possibly have produced. The advantages are more numerous than we can here detail. Supposing an ordinary fire requires the shafts to be sealed for two months, what is the proprietor to do in the meantime, if he cannot reduce the fire to a given space in the mine? His connection in trade, if not entirely lost, are restricted and broken, his mine injured and consumed, and the working colliers left to starve out the interim. His annual rents, interest of capital, and the more serious disbursements of incidental expenses, fall heavily upon him; whereas the immediate application of our experiment would put the mine in a working condition, with a delay of not more than two days. These facts are brought before the public for the benefit of all classes, being a public remedy for a national loss. To the untiring energy of Mr. Gurney are we indebted for them. He voluntarily tendered his services, and owing to his ability, the mineral property of this kingdom has been insured against the destructive element of fire, and consequently made a safer investment for capital. I may add, the expense of this experiment was trifling compared to the inconvenience, delay, and cost of letting in water to fill the mine,

and pumping it out again, being not more than as many pennies as the other would have been pounds. J. DARLINGTON.

ASTLEY COLLIERIES NEAR MANCHESTER, *April 30, 1849.*

Shortly after this Mr. Darlington had another opportunity of testing the efficiency of the application of carbonic acid gas for extinguishing mine-fires when another fire ignited in the following June at the same colliery. This took place from an explosion of gas setting the coal on fire in old workings. He immediately set men to work building brick and sand stoppings, made of a brick wall and three feet of sand, and another wall of brick, having the sand packed solid between the two walls. The most difficult operation was to build the stopping on the return, or front side of the fire, where they had to face the smoke. But with arduous efforts they succeeded in making a stopping three hundred feet away from the fire. It was a difficult operation, and the men could not stand in the smoke above fifteen minutes, owing to its asphyxiating influences. They had a continual change of men, and in a few hours succeeded in having the fire inclosed on all sides within a certain space in the mine. A pipe was laid to convey steam from the boilers at the top of the shaft, and a jet fixed in the stopping on the upcast side to exhaust the inclosure. Pure carbonic acid was manufactured this time by the humid process, and introduced into the inclosure at the lower gallery, a lower level, than the spot where it was being exhausted. There was no jet used to force it into the inclosure, as they found it to enter readily to fill the vacuum created by the exhausting jet. The gas was manufactured by sulphuric acid and common limestone, and introduced through a pipe four inches in diameter. In about an hour after applying the carbonic acid gas, through the impatience of the men, Mr. Darlington consented to open the wall inclosing that part of the mine. They found this was rather too soon, and had positive proof that the fire was still existing, although not occupying more than an area of five or six inches square. On account of the suffocating influences of the carbonic acid, they could not approach the fire until after taking the precaution of admitting atmospheric air into the inclosed place, when, in a few minutes, they were able to approach it. The heat was so intense at that particular point that, upon the admission of air, it again ignited, and spread to two or three yards square, and they were satisfied that in another five minutes the fire would have been as great as ever, but they succeeded in putting out this small remaining spot by two or three pailsfull of water.

After the extraordinary extinguishing powers of carbonic acid, as applied in the foregoing cases, became known to the public, Mr. Gurney's system has been repeatedly applied with admirable effects, modified in various ways, suitable to the circumstances in which mine-fires happen; and it has been perfectly successful in a large number of cases. But the reader must not be led to believe that the application of carbonic acid is infallible, for that would be wrong and creating a false impression. When fires occur in places where the atmospheric air cannot be effectively ex-

cluded, the application of incombustible gases has signally failed to extinguish them in nearly every instance.

I will cite another case, which I think is suggestive, where this system was applied more particularly with a view of preventing explosions during a mine-fire, occurring not very long ago, at the Wynnstay colliery, North Wales. A small explosion of gas ignited the coal and set it on fire; and they went to work and built that part of the mine off with wall stoppings. A steam-pipe happened to be already leading into this enclosure, and they knew it was broken there. Seeing that explosive gases were rapidly accumulating, they poured carbonic acid into the region of the fire through this pipe, for the direct purpose of making the atmosphere of that region non-explosive, and were successful. This atmosphere of incombustible gases was also an effective barrier to the admission of air, and finally extinguished the fire. Both shafts had to be closed and nine-inch pipes inserted in each stopping, through which the carbureted hydrogen escaped after filling the mines. The carbonic acid was produced by sulphuric, or hydrochloric, acid mixed with limestone; having two vessels so that while one was being charged, the other was in operation, forcing the gas into the mine. A practical chemist was employed, who analyzed the gases daily and superintended the operation. As a precautionary means, the carbonic acid was forced in again while they were reëntering the mine, until they were assured of the non-existence of fire, and which, to their joy, was effectively extinguished. The cost of this operation was only a trifle in comparison to the enormous expense arising from flooding a mine with water.

Water holding carbonic acid in solution is found very effective in extinguishing fires; but, as yet, there is no apparatus brought to use which can produce it in sufficient quantities to meet the exigencies of most cases of mine-fires. The Babcock extinguisher produces this in small quantities; about seven gallons of water holding in solution two and a half pounds of bicarbonate of soda, is placed in a cylinder, and about eight ounces of commercial sulphuric acid is suspended in a glass or leaden vessel in such manner that the acid is precipitated into the solution by withdrawing the stopper. A quantity of gas which, under ordinary pressure, would occupy about eight cubic feet, is liberated, but under the pressure raised by its own elasticity in this case, about one hundred pounds per square inch, it remains dissolved by the water. This pressure forces the water out very rapidly when required for use, and the solution possesses extraordinary extinguishing powers. The largest of these machines are mounted on carriages, and they hold about seventy-five gallons of the solution. If two of these were mounted upon trucks fitted to mine tracks, and kept on hand ready to be removed immediately to the seat of a fire; and while one is being charged, the other kept in operation, this apparatus could be made very effective in extinguishing mine fires, and especially so where there is danger from explosive gases accumulating in close proximity to the fires.

Owing to the general destruction, enormous expense, and great loss caused by flooding mines with water, it should be the last method adopted for extinguishing fires. And even by flooding mines, there are many instances where, upon taking the water out and admitting air, the fire again ignited and burned as briskly as ever. This occurs where fires are located upon elevated grounds, having no escape for the air and gases, which as the water rises, are compressed and pent up, so that the water cannot approach the fire nor cool the surrounding strata; consequently, this space is converted into a magazine of heat, retaining a combustible temperature; and upon taking out the water and admitting fresh air, the fire instantly rekindles. This has repeatedly happened in all countries where fires occur in coal mines; therefore, in cases where a mine must be flooded, and the locality of the fire being such as to have no passages for the escape of the pent air and gases, the precaution of providing such should invariably be taken before the water is admitted. As stated before, many instances could be cited where, after flooding mines, and upon taking the water out again, the fires were found burning, and an escapage for the pent gases had to be afterwards made before the fires could be effectually extinguished.

RECORD OF COLLIERY IMPROVEMENTS FOR 1882.

The Lehigh Valley Coal Company.

This company bought the Maltby colliery from Mr. C. S. Maltby, and took possession June 14, 1882. Prior to this, the sand and surface-water had broken into the No. 1 shaft, filling it up to the upper seam, causing it to be of no further practical value; and the coal seam, then opened into, in the No. 2 shaft, was exhausted. This company concluded to abandon all this, and erect substantial dams around the No. 2 shaft, and sink it to the next lower vein. By erecting these dams the large expense of pumping the water of the No. 1 shaft and all its adjoining workings was obviated. A plan of the dams was furnished by the mining boss, Mr. Thomas Lawther, which is found in this report. The perpendicular height of water which has to be sustained is about eighty feet. The No. 2 shaft is now extended to the eleven-foot seam, where they are working to effect a second opening.

Lehigh and Wilkes-Barre Coal Company.

In the Hollenback colliery a tunnel was driven from the Baltimore to the Hillman seam, where they found good coal, seven feet thick. The tunnel was 8x16 feet area, on a grade of 18 degrees, and is 700 feet long. They are now working to effect a second opening by connecting with the main shaft. They also sank a slope from the west gangway on the shaft level to the bottom of the synclinal, a length of 700 feet, on a grade of 10 degrees, which opens room for a convenient range of chambers.

At the Empire shaft a tunnel was driven on the level of No. 5 slope, from the Baltimore to the Red Ash seam, which was 7x12 feet area, and

600 feet in length. This opens to a large tract of coal, which will be extensively mined as soon as a second opening can be effected. The old No. 2 shaft, whose workings were connected with the upper Red Ash tunnel in this mine, was arranged as an escape for the men, in case of emergency, by having good accessible ladders erected up through it.

At the Stanton shaft, a force of men were kept at work through the year re-opening the mine and restoring the ventilation of the old workings. A gangway has been driven a long distance, from which a series of chambers will be opened as soon as connection can be made with the new air-shaft. The latter is now sunk to the Baltimore seam, a depth of 840 feet, and they expect to have it connected with the Stanton workings by the middle of April, 1883. A 35-foot fan was erected on top of this shaft, ready to set to work when the connection is made, which will produce splendid ventilation upon the starting of the operation. The new breaker is completed, ready for operation, as soon as the connection with the air-shaft is made.

At the No. 9 shaft Sugar Notch, the two tunnels reported in last year's report were completed—one from the Ross to the Red Ash seam was 7x12 feet area and 705 feet long, the other, not on the same level, but from the Ross to the Red Ash vein, also was 7x12 feet area and 560 feet long. A new fan was also erected on this colliery, which has improved the ventilation and made the colliery much more comfortable to work in.

At the Lance colliery a new air-shaft was sunk, which is 10x18 feet area and a depth of 520 feet, and its connection with the main shaft effected. A new 35-foot fan was erected, on top of the air-shaft, to ventilate the colliery, when ready for operation. The old breaker was pulled down, and a new one is in progress of construction, which they expect to have completed by the beginning of next May, when the mine will begin to ship coal again.

At the Nottingham shaft a new tunnel was driven from the Red Ash seam to work the Ross, none of which has yet been mined. The tunnel was 7x12 feet area, and 1,075 feet in length, and they are, at this writing, working to effect a second opening to it.

At the Reynolds slope a tunnel is in progress from the Red Ash to work the Ross seam, 7x14 area, and had been driven, at the close of the year, a distance of 300 feet. Another tunnel was driven through a large fault, which opens a large tract of coal hitherto untouched; it was 360 feet long, and has an area of 96 square feet.

At the Wanamie colliery a new tunnel was driven from the Ross to work the Red Ash seam, which has an area of 72 square feet, and is 390 feet long. A new fan, 15 feet diameter, was also erected at this colliery, which has been the means of producing much improvement in the ventilation.

The South Wilkes-Barre shaft is completed to the Hillman seam, a depth of 700 feet, and have found the vein proving better than their expectation. This has opened a large tract of hitherto solid territory of coal, and

they have concluded to leave the shaft for the present at this depth, and proceed to work the Hillman seam as soon as a second opening can be effected to the Stanton air-shaft, where it is intended it shall be made.

The Delaware and Hudson Canal Company.

At the Laurel Run mine a short tunnel was driven from the lowest split of the Baltimore seam, a distance of 129 feet and 7×12 feet area, to the checkered vein 5½ feet thick, from which that seam will be mined to a more or less extent, and there is a large area of it intact.

At the Conyngham shaft, a pair of new fans 17½ feet diameter was erected to supersede the old one, which proved inadequate for the ventilation required in the mine. These fans are of Mr. Scharar's pattern, and are giving satisfaction.

At the No. 5 shaft, Plymouth, a second opening was effected to the workings of the Cooper seam by sinking a shaft thirty feet depth and sixteen feet area, which can be used as an escapage for the men in case it be required.

The Susquehanna Coal Company.

This company has under way a number of improvements, some of which are the following: At the Grand Tunnel, the water was pumped out of the old slope workings, with a view of re-opening them and sink a slope to mine the coal lying below these workings, of which a large area lies intact.

A large air-shaft is in progress of sinking for the purpose of ventilating the No. 4 slope and other workings, which was, at the end of the year, 160 feet deep, having an area of 13×18 feet, upon which, when completed, a pair of double fans will be erected to create the ventilation.

At No. 2 shaft, a new slope was sunk from the level of the shaft to a length of 381 feet, and is still in progress of sinking at this writing. It passed through a series of rolls, but is now opening a track of good coal, in which two lifts have already begun to be mined. A new tunnel is also in progress, and has already reached a length of 672 feet, having an area of 7×15 feet, which is destined to open the Ross and Twin veins at that level.

The No. 4 slope is being extended also, and had reached a depth of 318 feet from the old foot at the close of the year.

The Wyoming Valley Coal Company.

This company bought the Albright Coal Company's colliery, formerly called the Ellenwold, and they have pumped the water out of the shaft and are mining the coal from there since. A new fan was also erected on the air-shaft, a description of which can be seen in the table of New Fans in this report.

The Kingston Coal Company.

Another new shaft is in progress of sinking for the Red Ash seam by this company, the size of which is 10×30 feet; and it was down over 200 feet at the close of the year 1882.

The Gaylord Coal Company.

A new air-shaft constituting a second opening to the Red Ash vein was sunk from the Ross seam, a depth of 120 feet, having an area of 10×12 feet. They also made two new planes, one in the Ross and the other in the Red Ash seam. Their lengths are 500 and 400 feet, respectively, on a grade varying from 13 to 18 degrees.

A. J. Davis.

At the Warrior Run colliery a new tunnel was driven from the D to E vein, a distance of 120 feet, and another is in progress from the D to B or Red Ash vein.

W. G. Payne & Co.

At the East Boston mine of this company, a new air-shaft was sunk convenient to the main workings, a depth of 150 feet, having an area of 10×15 feet, from the surface to the Cooper and Bennett veins, and the fan was removed from the old shaft and placed upon this. The ventilation of the mine has been greatly improved by this change, and is produced at less cost.

Haddock & Steele.

This company bought the Black Diamond colliery from J. C. Hutchison, and took possession March 1, 1882. Since then they have graded the underground slope, and made considerable improvements in the work.

The Red Ash Coal Company.

This company completed their second colliery ready to begin shipping coal on the 1st of March, and mined 69,204 tons of coal by the end of the year. All the coal, yet mined, is above the level of the breaker, and the Ross and Red Ash seams have been cut by a tunnel, through which the coal is brought out. A new slope was sunk, reaching a lift of coal below the level of their No. 1 colliery, from which a considerable quantity of coal can be very conveniently obtained.

Waddell & Walter.

This company completed their shaft at the Raubville colliery, and effected their second opening by connecting with the workings of the Black Diamond mine. The shaft was 170 feet to the Bennett vein. A new fan was erected to ventilate the workings, a description of which can be seen elsewhere in this report.

Waddell & Company.

The Bennett shaft, 10×20 feet, was completed, and cut the Bennett vein at a depth of 320 feet; also an air-shaft for the same mine. The breaker was set in operation in May, 1882, and during the remainder of the year they mined 26,226 tons of coal. This colliery is situated in Plains township, east of Mill Creek. A new fan was erected to ventilate the colliery, having a diameter of 22 feet, which is producing a ventilation of about 80,000 cubic feet per minute.

The Alden Coal Company.

The Alden colliery is situated near the east end of Newport township, and is a new establishment. The shaft is 11×24 feet area and 225 feet deep to the Bennett vein, which is five feet thick of good coal. They have a tunnel driven from the surface into the Bennett and Baltimore veins; this is 800 feet long, having an area of 7×9 feet. The breaker was nearly completed and ready for occupation at the end of the year.

The Clear Spring Coal Company.

This again is a new coal firm and have opened a colliery in West Pittston which will be ready for operation the beginning of 1883. The shaft is 12½×28 feet and 160 deep, cutting the Seven-foot and Pittston veins. An air-shaft has been sunk also, to which connections are made in both veins. The breaker is ready to commence shipping coal in the beginning of the following year.

The Fuller Coal Company.

This company is sinking two shafts, one for hoisting and the other to comply with the law requiring second opening. The main shaft is 10×34 feet, and will have a probable depth of 250 feet, the air-shaft is located 185 feet from the main one, and has an area of 10×14 feet, is expected to be the same depth as the main one. The breaker, which is now in course of erection, will have a capacity of 1000 tons per day. The hoisting engines will have direct motion, cylinders 34×40 inches, and a conical drum. A fan 14 feet diameter, open periphery, will be erected at once upon the completion of the shafts, and the colliery is expected to be in operation by next June.

The Delaware, Lackawanna and Western Company.

The Woodward shaft, reported in last year's report was down at the close of this year a depth of 300 feet, and has employed about 60 persons. Its size is 10×53 feet, and will have probably a depth of 800 feet when completed. Another shaft has been commenced to constitute a second opening for the Woodward. This is 12×35 feet, and was just begun at the close of this year. I am informed that this shaft will also be utilized to work some of the upper veins. This company has also began preparations to sink a shaft on the Pettibone property, in the center of the valley, a little north of Wilkes-Barre, which is to be 10×35 feet area.

The Hanover Coal Company.

This new colliery is located in Hanover township, south of Sugar Notch, and is leased by this company from Mr. W. Maffitt, of Wilkes-Barre. A breaker is already nearly completed, and a tunnel driven into the Red Ash vein, where the coal is found seven feet thick. They will also work the Ross Seam from a temporary slope, made out of an old chamber driven up from old workings which had crossed the boundary line into this property.

They will be ready to start sometime in March, 1883, and is expected to mine considerable quantity of coal before the end of the following year.

The Hillman Coal Company.

This company is sinking a shaft a little east of Wilkes-Barre to work the Hillman seam. It is down at this writing 185 feet. The breaker is also under progress of construction, and they will be ready to ship coal probably about next July. The size of the shaft is 16×11 feet and its depth when completed will be about 220 feet.

Cowan and Dininny.

These gentlemen are sinking two shafts on the Schooley property, northeast of Wyoming. The main shaft is down at this writing about 180 feet. Its size is 24×10 feet, and will, when completed to the Pittston vein, have a depth of about 350 feet. They have experienced great difficulty in sinking this shaft, owing to the unusual depth of sand existing there, about 100 feet of depth. After going down 102 feet, they struck rock. They had one set of cribbing put in, and when they struck the rock, another cribbing was put inside of the first, and a brick-cemented wall built in the space between the two. The timber used in the cribbing was 12 inches thick. The same trouble was experienced in sinking the air-shaft, which is down at this writing about 100 feet, and they have not struck rock yet. A new breaker is being built, and the structure will be completed about next May, ready to ship coal, provided the shafts will be completed. I am informed that this company contemplate sinking another pair of shafts, near Wyoming, at the foot of the mountain, and the ground is already broken where it is to be sunk. The shafts will open a large territory of coal lands hitherto undeveloped, the coal having not been mined anywhere near that section.

Table No. 3 shows the dimensions and depth of all the shafts which were completed, and of those which were in progress at the end of 1882, to which the reader is referred.

TABLE No. 3.—*Giving details relative to the progress of new shafts in the Wilkes-Barre District and their depths, December 31, 1882.*

NAME OF THE SHAFTS.	Names of Operators.	Purposes.	DIMENSIONS.		Depth on December 31, 1882—feet.	Deepest coal seam to be cut at present.	Probable depth in feet.	Capacity of production per day in tons.	Number of persons employed.	Fatal accidents to employees.	Non-fatal accidents to employees.
			Length in ft.	Breadth in ft.							
1. Dorrance,	Lehigh Valley Coal Company,	Hoisting coal,	52	13	602	Baltimore,	1,000	1,001	38	None.	None.
2. S. Wilkes-Barre,	Lehigh and Wilkes-Barre Coal Company,	Hoisting coal,	24	12	740	Hillman,	740	....	24	1	None.
3. Lance Air Shaft,	do. do.	Ventilation,	18	10	520	Baltimore,	520	....	50	1	None.
4. Stanton Air Shaft,	do. do.	Hoisting and ventilating,	26	12	840	Baltimore,	840	...	24	3	2
5. Woodward,	Delaware, Lackawanna and Western Co.,	Hoisting coal,	53	10	300	Red Ash,	800	1,000	60	2	1
6. Woodward, No. 2,	do. do.	Hoisting and ventilating,	35	12	20	Red Ash,	800				
7. Pettibone,	do. do.	Hoisting coal,	37	10	*						
8. Alden,	Alden Coal Company,	Hoisting coal,	26	12	225	Baltimore,	270	1,000	140	1	None.
9. Bennett,	Waddell & Co.,	Hoisting coal,	20	10	320	Baltimore,	320	1,000	Given in tables.		other
10. Bennett Air Shaft,	do.	Ventilation,	10	10	350	Top split of Balto.	....	...			
11. Clear Spring,	Clear Spring Coal Company,	Hoisting coal,	28	12½	160	Pittston Vein,	160	900	19	None.	None.
12. Schooley Shaft,	Cowan, Dininy & Co.,	Hoisting coal,	24	10	170	Pittston Vein,	350	900	65	1	None.
13. Schooley Air Shaft,	do. do.	Ventilation,	10	8	100	Pittston Vein,	350				
14. Fuller Shaft,	Fuller and Coal Company,	Hoisting coal,	34	10	70	Nine-Foot Vein,	250	1,000	36	None.	None.
15. Fuller Air Shaft,	do. do.	Ventilation,	14	10	65		250				
16. No. 4, Kingston,	Kingston Coal Company,	Hoisting coal,	30	10	200	Red Ash,	600	...	†	None.	None.
17. Hillman Shaft,	Hillman Coal Company,	Hoisting coal,	16	11	85	Hillman,	220	800			

*Just started. †Account given elsewhere.

TABLE No. 4.—*Giving details relative to new fans and fan-engines erected during the year 1882 in the Wilkes-Barre district.*

NAMES OF THE COLLIERIES.	PATTERN OF FAN.	DIMENSIONS.		SIDE INLETS.		Working speed in revolutions per minute.	SECTIONAL AREA OF		Cubic feet of air per minute exhausted in inlet.	Water gauge on fan side.	Horse-power of fan.	FAN ENGINES.	DIMENSIONS OF STEAM CYLINDER.		Gearing.	Steam pressure in pounds.	Horse-power of engines.
		Diameter of fan in feet.	Face of fan in feet.	Number of inlets.	Diameter of inlets in feet.		Upcast in square feet.	Downcast in square feet.				Horizontal or vertical.	Diameter in inches.	Length in inches.			
1. Stanton air shaft,	Guibal,	35	12	1	17½	Is	not in	operat	ion yet.	. . .	. . .	Horizontal,	20	48	Direct,	60	100
2. Sugar Notch shaft,	do.	20	6	2	. .	59	120	. . . .	120 360	1.83	4.13	do.	16	. . . .	do.	60	60
3. Lance,	do.	35	12	1	17	. . .	180	. . .	. . . .	. .	. .	do.	22	. . . .	do.	60	110
4. Wanamie,	do.	15	4½	1	8	90	80	80	75,000	0.6	9.36	Vertical, . .	12	. . . .	do.	55	35
5. Conyngham,	Scharar double fan,	17½	4	4	8	88	80	200	160,000	1.25	31.51	Horizontal,	16	30	Belt,	70	100
6. Harry E,	Guibal,	15	6	1	6½	40	80	152	34,000	. . .	. .	Vertical, .	14	. . .	Direct,	. .	40
7. Midvale,	do.	20	6	1	10	30	. . . .	. . . .	63,000	1	9.92	Horizontal,	16	36	do.	60	
8. East Boston,	do.	15	4	1	4	90	150	230	93,000	0.4	5.86	do.	12	24	Belt, .	60	30
9. Raubville shaft,	do.	16	5	1	6	30	60	120	50,000	. . .	. . .	Vertical, . .	10	. . . .	Direct,	40	30
10. Bennett shaft,	. . . . .	22	7⅛	1	9	45	80	120	80,000	. . .	. .	do. . .	16	. . . .	do.	55	60
11. Alden,	Guibal,	15	5	1	7½	30	63	55	. . . . .	. . .	. . .	Horizontal,	12	20	Belt, .	60	26

The Ambulance Law.

At all the collieries of this district stretchers have been procured, as required by this law, and are kept at convenient points near the mines; and at nearly all the collieries, where men who reside at long distances away from the mines are employed, ambulances of the description given in the act have been procured. There are fourteen of these in the district altogether, which are kept at various points convenient to each group of collieries. This act has been the means of causing what was really needed at the coal mines to be procured, and through it the almost cruel practice of conveying injured persons home in rough coal wagons has already become obsolete.

First Aid to the Injured.

During the last two or three years I have been deeply impressed with the thought that a little more education regarding the best manner of treating injured persons, before and while being removed to their homes, and until the arrival of a physician, would contribute much towards alleviating the pains of those unfortunate fellows who are injured. I have no doubt that many persons' sufferings are intensified and prolonged, and most probably some die, for not having proper treatment immediately upon receiving the injuries. The prevailing custom when a man is injured is to remove him home at once and send for a surgeon. No examination is made of the nature of his injury. A vein or artery may be cut, but it is not discovered until the surgeon arrives, and perhaps when it is too late to save the unfortunate person's life. A limb may be broken, and the broken ends of the bones are left to pierce the flesh at every step while he is being conveyed home. To many poor fellows with broken limbs, their shifting in and out of cars, incident to their removal home, has been a severe ordeal, intensely painful. The miners generally are willing and ready to make any sacrifice for the comforts of injured comrades, and endeavor to handle them with care and tenderness; but they do not know anything concerning the best manner of treating the injuries of the person, so as to aid his recovery and relieve his sufferings during removal.

I think if the physicians of mining districts could be induced to take interest in this humane question, and give free lectures to the people connected with coal mines, instructing them in the best manner of treating injured persons prior to the arrival of a surgeon, they would contribute greatly to allay the torturing pains of the unfortunate fellow-beings who are the victims of mine accidents.

The late Peter Shepherd, M. B., who was killed at Isandula January 22, 1879, whilst endeavoring to save a wounded soldier, prepared a concise little book of instructions on "Aids for First Help to the Injured," and it is published by the St. John Ambulance Association of London; and also a pocket aide-memoire, from which the following is taken, being applicable to the cases of injury frequently met with in mines:

Wounds–Bleeding from Arteries.

Head.—Pad and bandage the wound.

Neck.—Place thumb in wound and press backwards against spine.

Arm-pit.—Press thumb into wound, second person to press main artery behind middle of collar bone.

Upper and fore-arm.—Press with fingers, or apply tourniquet to inside of upper arm. When below elbow, place pad in hollow of bend of elbow, and bend fore-arm against upper arm.

Palm of hand.—Bandage hand closed over a piece of stick, or press arteries at front of wrist.

Thigh.—Hand pressure at center of fold of groin, or by tourniquet on inside of thigh.

Ham, or back of knee-joint.—Same as for thigh, or press by hand or tourniquet in ham above wound.

Front or back of leg.—Press by hand or tourniquet at back of knee-joint, or double the leg up against a pad placed in the ham.

Instep.—Pressure to the middle of front of ankle.

Sole of foot.—Bandage with pads behind ankle bones and middle of instep.

A tourniquet can be made by placing a stone over the main artery, tying a handkerchief loosely over it, and then twisting it tight with a stick.

Blood from an artery is bright red, and flows in jets.

Blood from a vein is dark bluish, and flows slowly.

The flow in arteries is from heart to head, hands and feet.

The flow in veins is just the reverse.

Bleeding from veins (for all situations).—Elevate the part and apply pad and bandage.

Flesh wounds.—Wash, stop bleeding, fix parts in natural position without delay.

Bruised wounds.—Wash, apply wet cloths; if about head, poultices.

Broken Bones.

Lower jaw.—Bandage the lower to upper jaw with handkerchief.

Collar bone.—Place pad in armpit, bandage elbow to side, sling fore-arm.

Ribs.—Apply bandage six inches wide, eight yards long, round chest.

Upper arm.—Apply roller bandage to hand and fore-arm, splints to back and front, and sling fore-arm.

Fore-arm.—Apply padded splints to back and front, from hand to elbow, holding the arm extended, with thumb pointing upwards.

Hand.—Apply splint bandage, and support in sling.

Thigh.—Apply a long splint from armpit to outside of heel, and a short one from back to knee on inside, and bandage.

Leg.—Apply splints inside and outside and bandage.

Signs of broken bones.—Motion at the part; crackling sensation on moving the broken ends; alteration in shape; often shortening. Always

apply splints before lifting or carrying. Dangers are of pushing the ends through flesh, blood-vessels, nerves, or internal organs (lungs.) Splints may be formed of soldiers' weapons—rifles, swords, and scabbards—umbrellas, walking-sticks, broom handles, drills, folded papers, &c; bandages from handkerchiefs, sheets, and shirts.

Esmarch's Triangular Bandage.

This bandage is a triangular piece of unbleached calico; the lower border measures four feet, and the two side borders two feet ten inches each. It can be applied in thirty-two different ways; it answers every purpose for temporary dressings; and the means of making one are always at hand, namely: a pocket-handkerchief cut diagonally in two. Its application is so easy, that a look at the accompanying diaphragm, will enable anyone to use it in the manner indicated in the illustrations.

DESCRIPTIVE RECORD OF FATAL ACCIDENTS.

Fatal Accidents from explosions of Carbureted Hydrogen Gas.

From a total number of fifty-nine accidents from the above cause, ten proved fatal, and, as frequently stated in previous reports, this class of casualties nearly all occur through the carelessness of some one, not always of the victims; but very frequently the victims and others are jointly to blame for them. With a proper degree of regard to the customary rules in gaseous mines, on the part of the working men, and a strict supervision on the part of the officers of the mines, regarding the said well-known rules, the number of accidents from this cause could certainly be reduced. Occasionally, the officers, especially fire-bosses, are found guilty of the grossest carelessness and neglect regarding their own safety, and some of them, during this last year, were among the greatest sufferers from this class of accidents. A brief description of all the casualties which proved fatal is given in the following pages, from which the operatives in coal mines could learn valuable lessons.

Accident No. 15. William Scoble, a miner, aged 35 years, was severely burned by an explosion of gas in the Laurel Run Slope, March 25, and died the following day. Shortly prior to this date, the lowest lift of workings in this mine caved in, and the air courses in that section were destroyed, so that it could not be ventilated. Mr. MacDonald, the mining boss, suspecting that gas was accumulating in the old workings beyond the cave, put men to drill a hole through the pillar from the airway of the next lift into the face of one of the old chambers which, when through, proved the pillar to be only eight feet thick, and the gas came out full of the hole. After this, he had two more holes drilled, which proved beyond doubt that the old workings were filling with gas from top to bottom. He then concluded to open a cross-hole in that pillar, to give an outlet for the air which would pass through the cave, and use this to keep the workings clear of gas. William Scoble and James Ashford, both miners, were selected to effect this opening, and James C. Williams, fire-boss, was sent

"THE FIRST

as recom

PROFESSOR

BANDAGE"

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with them to see that the work was done in a safe manner; and they were put to drive it during the last three days of the week, when the colliery was not in operation, and thereby incurring no danger of the gas going in contact with the lights of the workmen, They were cautioned to be careful, use no powder, nor any naked lights, and effect the opening with pick-work, so that there should be no possibility of the gas taking fire. The air current passing in the airway upon which they were working was very large, equal to sixty thousand cubic feet per minute, which made it cold to work and difficult to retain light. Everything went on right until Saturday, their third day, when a small hole was effected, through which a strong current of explosive atmosphere was flowing towards them, blowing the dust into their eyes every time they struck the pick, and the safety lamp could not be held near enough to give light on their work. After consultation they agreed it would be safe to have a naked light in the cross-heading, on the opposite side of the airway, believing the air-current in the airway strong enough to prevent the gas to cross to it; and then one stood in the cross-heading holding a naked lamp, while the other two were working in its light; and after working thus a little while, the gas came in contact with the flame and exploded. Fortunately, the hole was too small to allow the whole body of gas to explode at once, but was hissing out its flame, filling the airway for several yards, and the three men were burned quite severely; but if it had had vent to explode at once, they would, undoubtedly, have been instantly killed, and the mine probably destroyed. When this occurred, they were thrown on the inner side of the hole, on the airway, and were compelled to make their escape through the workings, in advance of the poisonous products of the explosion, which were carried forward by the air-current, and they were lost in the upper workings, having no light to see their way out. After a protracted search for six hours, they were found in the upper lift workings, suffering terribly from the long exposure of their burns. Scoble died the following day, leaving a wife with three children.

It is evident that if these men had complied with the instructions given them by their boss, they would have accomplished their dangerous work without an accident; and if the fire-boss had done his duty he would not have consented to use naked light on no consideration where the danger was so great.

Accidents Nos. 29, 30, and 31.—James Carey, aged twenty-one years; Henry Hughes, aged twenty-three years, and Edward Finnegan, aged fifty years; all sinkers. The first was instantly killed, and the other two fatally burned while descending the Stanton air-shaft, June 15. This calamity occured about eight o'clock, A. M., just when the men were descending the shaft to their work. Precisely at seven o'clock the night men came up and reported nothing unusual. The day men could not go to work then because the injector failed to force water into the boilers, delaying them for one hour. At the time stated, six men, viz: James Carey, Henry Hughes,

Edward Finnegan, John Welsh, Michael Lynch, and the engineer who attended the pumps, whose name is not recorded, went on the bucket and descended the shaft to a point where the upper pump was stationed. Here the engineer stepped off to start the pump, and remained there while the others were lowered down, and upon reaching a point within two hundred feet to the bottom a terrific explosion of gas occurred. The reader can easily imagine the terrible situation of these men at that time. All those on the bucket were severely burned, and young Carey fell off to the bottom and was instantly killed. With all the timber loosened by the explosion and falling down the shaft, it is surprising that any of them escaped with their lives. When the bucket was raised the other four were still on it, but were all severely burned. Hughes died on the 17th and Finnegan on the 19th of the same month. The engineer escaped without serious injury, but had very nearly been blown off the platform by the forcible wind of the explosion, and saved himself by clinging to the fastened pipes of the pump. It is supposed the accumulation of gas took place owing to the conditions of the temperature of the atmosphere outside and of the air inside of the shaft on that particular morning. The shaft was seven hundred and thirty feet deep, had passed through several seams of coal, the last, when within two hundred feet to this depth. While passing this last coal seam they experienced some trouble with gas, which was generated very freely. The shaft was divided into two compartments by a board partition, on one side of which the pumps exhausted their steam, and thereby causing a current of air to flow down the hoisting way and up the pump's side. Since this partition had been extended below the said seam of coal, they had no trouble with gas; but when the accident occurred the pumps had been idle several times during the night owing to the failure of the injector to work, and thus the temperature of the outlet side of the shaft cooling to the same degree as that of the inlet side. Hence, there was no current, and the bucket having not passed through for an hour, the air in the shaft was stagnant. The gas evolving from the said seam of coal quicker than it was diffused into the air accumulated at that point, and when the men descended into it with their naked lights, it exploded with the sad results already described. Evidently, if the condition of the shaft had been tested with a safety-lamp before entering it with naked lamps this accident would have been averted. They were doing so after firing every blast, and had been doing it regularly after stopping to work for short intervals while passing the coal seams, but had abandoned that precautionary measure when this accident happened. Carey was of Scotch nationality, was married, but had no children. Hughes and Finnegan were both Irishmen, and the latter was married and his children all grown to manhood.

ACCIDENT No. 46.—Benjamin Reiley, a runner, aged twenty-two years, was fatally burned in the Wyoming shaft, Plains township, September 5th, and died from his injuries September 8th.

Shortly prior to this date they began to rob pillars in this mine, in the section where the accident occurred, and on Friday, September 1st, a large fall of roof came down across four of the chambers, and by Monday morning gas had accumulated over the fallen rocks to within fifteen inches of the regular roof of the coal seam. On this account, the parties who were working the pillars, near this locality, were stopped to work for that day, and on the following morning the situation was about the same, when the parties employed inside of this point were allowed to go to work, there being no danger, because the air-current passed by them before reaching the fall. David Rees, the miner employed on the pillar nearest to the fall, was shown and told to go to work in another place, and in order to remove his tools, told the driver to bring an empty car into his old place for that purpose. The driver brought the car, accompanied by the runner and door-tender, and they went to within forty feet to the edge of the fall, and when the runner was climbing into the car to fetch out the sprags, a thin layer of gas at the roof ignited and communicated with the large body of gas on the fall, exploding the whole, and burning the deceased fatally, and John White, the door-tender, and James Hogan, laborer, very severely. The miner, another laborer, and the driver escaped without receiving any injury.

In the investigation of the accident, the mine-boss said he had given positive orders to the miner not to enter that place unless he was accompanied by the fire-boss, and with no light but that of the safety-lamp; the fire-boss had not accompanied him, but had cautioned him against using a naked light if he would go before he came around to that place. The miner, in haste to get his tools, went, and told the driver to bring in a car for him, and, consequently, the accident occurred. Here is another instance where compliance with the orders of the boss would have saved a life to one, and serious injuries to the other two.

ACCIDENT Nos. 47 and 48.—Peter O'Neil, a miner, aged thirty-six years, and George Pheobish, a laborer, were both severely burned by an explosion of gas in the Conyngham shaft, Wilkes-Barre, September 6th.

The explosion occurred at about eleven, A. M., under the following circumstances: The west gangway, driven by John Leonard, was stopped because it was in advance of the airway, but the air-current was guided to the face by brattice; and on that morning the fire-boss found all the chambers and gangways clear of gas. Leonard and two laborers were employed pulling top coal down to gain more height on the gangway, a little distance inside of where O'Neal's chamber was started. The face of the latter's chamber was only ten yards from the side of the gangway, and was nearly level, but the top coal was broken through, leaving a large space where gas might accumulate in case it was not ventilated. At the time stated an explosion of gas occurred in O'Neal's chamber, burning him and his laborer, Pheobish, severely; and the flames expanded out on to the gangway burning Leonard and his two laborers slightly. O'Neal and Pheobish died in a few days after.

There was no direct evidence given to show how the gas was allowed to accumulate, but the circumstances attending the case pointed clearly to the neglect of O'Neal's check-door as the cause.

At every chamber there was a door to direct the ventilating current into their faces. O'Neal and his laborer had taken a long T-rail through his door a few minutes before that, and were in the act of laying the track with it when the explosion occurred; and it was supposed they had forgotten to close it when they passed through with the rail, causing the gas to accumulate in the top over where they were working, and which finally came in contact with their lights and ignited. A subsequent trial, made at the request of the writer, proved that gas would accumulate there in a few minutes by leaving the door stand open, but none would remain while the door was closed.

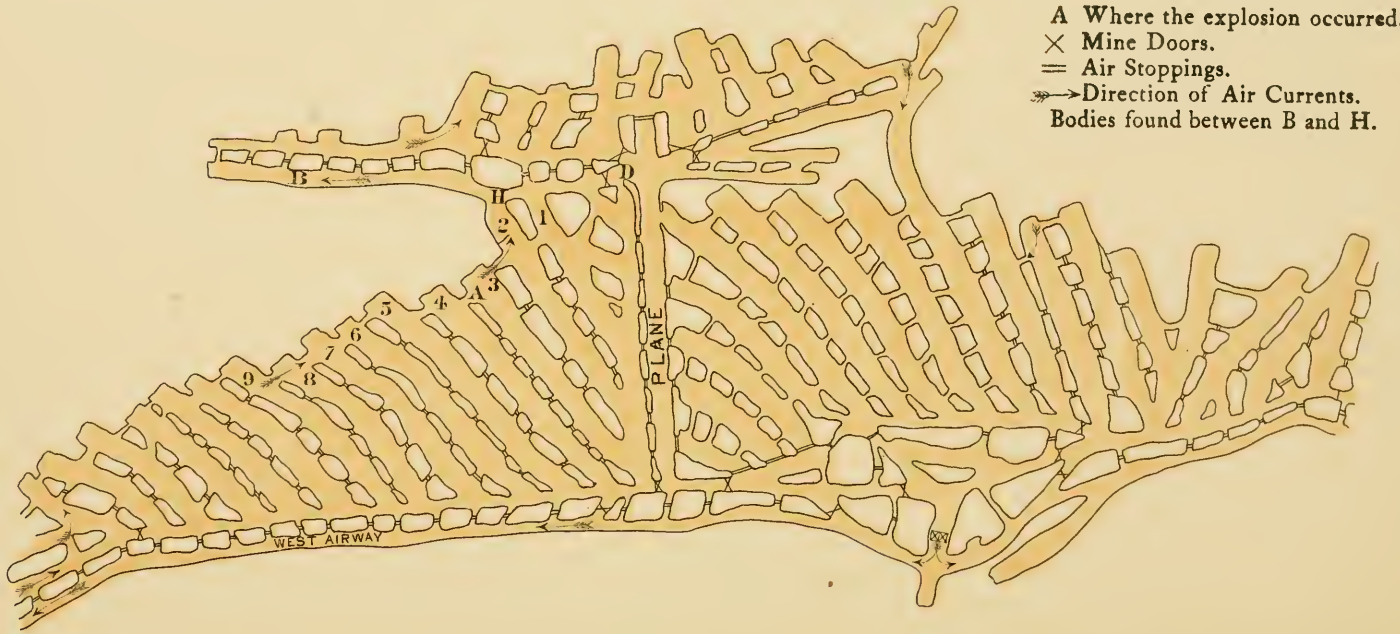
ACCIDENTS NOS. 51 AND 52.—Thomas Cape, a fire-boss, aged fifty-one years, and John Race, a runner, aged twenty-nine years, were both killed by an explosion of gas in the Dobson shaft, Plymouth, September 25. For several days prior to this date the pillars around the plane and west side of it in this colliery were crushing and showing unmistakable signs that a large section of the workings were in danger of caving, and during the night of September 24 a gang of men were under Thomas Cape's charge propping along the plane. (See plan of section of Dodson colliery.) About three o'clock, A. M., the following morning they heard a large fall of roof on the west side, and Cape took John Race and Henry Barnes with him up the plane, and their curiosity to know where the fall had occurred led them into the west side through the door at D as far as H, where they turned down into chamber 2 and as far as A in chamber 3, and here they encountered a body of gas, and having naked lights, the first intimation of its presence was an explosion, in which the three were burned and their lights extinguished. After this, in trying to find the way out, they evidently were confused, for they walked on towards the face of the airway from the point marked H, and the two named above were suffocated by the after-damp, and after that found lying on the airway at different points between H and B. Henry Barnes was also nearly suffocated when found, and was lying a few feet from the other two, and I have learned that he died since that time. There is no doubt that these men could have been saved if the other ones who were working on the plane had gone at once to rescue them upon hearing the explosion; but they were inexperienced with gas or fire-damp, and were afraid to go, fearing another explosion, and they all ran to the shaft and sent for the mine-boss, who was home in bed. After he came and learned the situation he also was afraid, and another man named Scott, a miner, was sent for, who as soon as he learned the situation went on and found the men as stated.

Those who knew the fire-boss said he was an experienced man; if he was, he must have realized the awful danger he was incurring by going into crushing chambers to meet the air current with naked light. If any

PLAN OF

Section of Dodson Shaft Workings, Plymouth Coal Co.

Showing the Location where Thomas Cape, John Race and Henry Barnes were burned,
September 25th, 1882.



gas should be relieved by the crush, in going the way they did, they were sure to meet it; and every practical miner experienced in the ways of fire-damp should have foreseen a danger so probable, and provide against it by taking none but safety-lamps with them. On the other hand we see in the action of the other workmen and of the mine-boss, the importance of having experienced men in every gang of workmen under-ground, and the mining-boss should never be inexperienced with gas, when having charge of a gaseous mine. In my last report, I had the painful duty of describing the fatal burning of another fire-boss in this colliery, but I hope the lessons taught by these deplorable accidents will have due effect upon the succeeding officers of this class, and that no more will occur through either negligence or any other manner. Thomas Cape was married and had one child. John Race was also married and had one child.

Accident Nos. 59 and 60.—Gavin Burt, a track-layer aged twenty-three years, and Peter Lamb, his helper, aged twenty years, were both killed by an explosion in the Pine Ridge colliery, Plains township, October 27, under the following circumstances: William Rees, the mining-boss, and Mathew Grey, fire-boss, went into a section of the old work in the forenoon to examine a block of solid coal, which had been left unmined when that part of the mine was in operation. After travelling the necessary portion of ground they returned, leaving a large section of old work beyond them unexplored. On starting out Grey called Rees' attention to an old door which had settled down, and to a stopping in a cross-heading which had fell. These permitted the air current to escape, without ventilating the workings inside of that locality. Rees had only been in charge of the colliery a short time, and did not realize the importance of these air stoppings and their bearing upon the course of the ventilation, and therefore thought nothing further of them. A little before dinner-time he saw the track-layer and his helper, and told them to go and raise two bars of T-iron which he had seen nearly covered with rubbage on an unused branch connected with the main track, and added that, when they would have spare time, they should go into the old workings, and gather all the pieces of strap-iron they could find, and send them out. Immediately after dinner they went into the old work, inside of the point where the bosses had been that day, and encountered a large body of fire-damp, when a terrific explosion ensued, killing both the track-layer and helper. The flames extended out to the main gangway, and set a car and pile of old timber on fire, owing to which, and the deranged condition of the ventilation, the bodies were not recovered for several hours after.

A number of persons who were employed in that vicinity failed to escape through the regular channels, owing to the prevalence of the smoke and after-damp, and they succeeded in escaping through a tortuous route through old workings into the Mill Creek colliery, which constitutes the second opening. In extenuation of his course regarding this accident, the mining boss says that, "when he told the men to go into the old work when

they had spare time," he entertained no thought of them going unless they would be accompanied by the fire-boss; but he did not tell them that because he understood it was a constant rule of the colliery that no person should enter the old workings without that precaution, However, this rule was not explicitly understood, as subsequent investigation proved, and the present foreman had evidently mistaken the extent of its effect. Both these young men were of high respect in the colliery and neighborhood, and their loss was generally mourned.

In reviewing the causes of these accidents, the reader will see that they all, except Nos. 29, 30, and 31, could have been averted by using the ordinary degree of precaution which is familiar to every practical miner who has had experience in gaseous mines. There are precautionary measures which should never be overlooked or neglected. It should be an unvarying rule that the safety-lamp should precede the open one at all times and under all circumstances; and I have no doubt that if this should be done, the number of this class of accidents would be greatly reduced.

Fatal Accidents by Falls of Roof and Coal.

Seventy-one accidents occurred during the year 1882 from the above cause, of which twenty-two have proven fatal to the victims. Evidently, this class of casualities can be reduced in number only by a more vigilant care on the part of the miners, for they nearly all occur through lack of care, and in many instances the utter disregard to danger of the parties who suffer from them. In these busy seasons, when good miners are scarce, too many inexperienced persons are employed to mine coal, and this class of miners depend too much on the officials of the collieries to care for their safety. I believe the bosses are doing their best to instruct them to work in a manner which insures the highest degree of safety; but their efforts cannot be effective in numerous instances, owing to their inability to be present continually at the places where those persons are employed. Occasionally an old experienced miner is caught by trusting too much to his practical knowledge, and works under a dangerous roof of coal, believing he could tell the moment it would fall, and is deceived.

With this class of miners the bosses are rather too much inclined to comply with their wishes regarding the need of propping or pulling down loose rock or coal; for we are taught by experience that many accidents would have been averted were the bosses to have courage enough to enforce their orders to prop or pull down loose coal promptly when a person is discovered working in danger, and not yielding to the contrary wishes of that person, no matter how practical he may be. No one can tell when a dangerous piece of roof or coal is going to fall, and the proper way to treat such cases is to secure it by propping it up or pulling it down without any delay.

To see that this is done is an inevitable duty devolving upon the mining bosses, and they neglect their duty when yielding to any person's wishes for delay in securing his working place, when the least doubt exists

in their minds as to its safety. A little more rigid discipline in this respect would be desirable and beneficial in some of the collieries of this district, and I am making efforts to impress its importance upon the bosses generally.

Accident No. 1.—Joseph Badman, a brattice builder, aged forty-two years, was instantly killed by a fall of rock in the No. 5 shaft, Plymouth, January 16th.

The deceased, with several other men, was clearing a fall of rock on the gangway, and all the men were under his supervision. They fired two blasts, to break large rocks, a little before dinner-time, and after dinner he and Horace P. Gilson were together consulting as to the best place to drill another hole, when a large piece of rock fell, killing him instantly, and injuring Gilson, quite severely, on his foot. Badman's attention had been called to the condition of the overhanging rock prior to the accident, and after tapping it lightly with the drill he pronounced it safe. Notwithstanding that, the men still regarded it with suspicion, and reluctantly worked on until the accident occurred, evading it as much as possible without revealing their fear to him. He was married, and left a wife with six children.

Accident No. 9.—William Singen, a miner, aged twenty-eight, was instantly killed by a fall of roof in the No. 3 colliery, Plymouth division of Delaware and Hudson Canal Company, March 2. After firing a shot he returned to the face of the chamber and found one of the props discharged, and when he was in the act of replacing it, a large area of the roof fell, resulting as stated. His laborer was approaching at the same time, and, fortunately, escaped without injury. The deceased must have hurried in his attempt to replace the prop without giving the roof proper attention, for it was composed of bone coal, and undoubtedly cracked considerably before breaking down, which should have been enough warning for him to stay away. He left a wife, but had no children.

Accident No. 13.—John Lathan, a miner, aged thirty-five years, was fatally injured by a fall of rock in the Midvale colliery, Plains township, March 17, and died about two hours later. He and Abraham Dunstan, both miners, were driving a cross-cut, and had it driven about twelve feet in from the side of the airway; they fired a shot in the lower side and immediately returned to work. Lathan was shoveling the coal back on the lower side when a large slab of rock fell upon him, injuring him so that he died within two hours later. The fatal stone measured ten feet long by three feet wide, and tapered like a turtle shell towards both sides. Lathan's mistake was that he did not examine the stone after firing the shot, before going to work under it. He left a wife but no children.

Accident No. 20.—Alfred Treglown, a rockman, aged thirty-three years, was instantly killed by a fall of rock in the No. 2 shaft, Nanticoke, April 24.

He was working in a rock tunnel, and had charge of the shift in which

he was working. A round of shots were prepared and charged ready to fire; some of the men were putting the tools on the truck for removal to a safe place, while others were connecting the battery wires, when a large mass of rock fell unexpectedly on the track outside of the tool car, covering a part of the wire also. This prevented them from exploding the blasts, because the tools were not safe on the truck inside of the fallen rock. So after a hasty examination of the roof they went to work clearing the road. Treglown was thus employed when a large lump of rock fell on him, killing him instantly, and the same time breaking Martin Kurzawski's arm. The deceased was an experienced workman, and was careful always while at his work. He was married and had four children.

ACCIDENT No. 23.—Felix Conway, a laborer, aged forty-eight years, was instantly killed in the Enterprise colliery, May 3.

Michael Welsh, chargemen, with three other men besides the deceased, were working together in the new tunnel on the left side of the underground slope. They had entered the coal inside of the tunnel, and had stood two pairs of double timber, but there was a space of twenty feet between the timber and face. Mr. Hislop, the mining boss, visited them in the morning, and knowing the brittle nature of the overlying rock, made inquiries concerning the safety of the roof. He noticed a fracture in the rider coal underneath the rock, and was suspicious of its safety, but they replied "it was all right and safe." He cautioned them to be careful, as it did not appear safe to him, and then he walked away to other parts of the mine. On several times during that day some of the men passed remarks expressing a doubt as to the safety of working under that roof, and yet they all desired to postpone the timbering work to the following day, when the colliery would not be working and no cars supplied to load coal in. Thus, hoping and trusting, they worked on until about three o'clock, P. M.; when they were all busy and off their guard, the roof fell, crushing the deceased so that he died almost instantly. It is in cases like this the bosses need to use their authority in a more decided manner. If Mr. Hislop had taken pains to examine the roof and found it dangerous, and given peremptory orders to timber it or pull it down at once, it is not probable the accident would have occurred. The deceased was married, but he and his wife did not live together.

ACCIDENT No. 24.—David R. Phillips, a miner, aged twenty-five years, was instantly killed in the Diamond shaft, Wilkes-Barre, May 3. He was employed in company with John Butler, William R. Williams, and William S. Evans, all practical miners, re-opening old cross-headings on top of the anticlinal separating the Diamond and Empire workings. The old chambers, driven up from each side, met at the top of this anticlinal, the apex of which was very narrow. Butler and Evans went down one of the old chambers to fetch up timber, while Williams and Phillips remained to make room to put them up. The coal was soft, shelly and very dangerous. Phillips was working down the coal, while Williams was watching the over-

hanging coal of which they were expecting a large mass to fall. Finally, Williams saw it moving, and instantly called Phillips to retreat but he, evidently believing his position safe, and that the falling coal would drop to the opposite pitch, continued to work. Williams repeated his call three times without effect and, finally, the mass came down and buried him underneath it. With all the force they could apply to remove the debris, they worked for two hours before succeeding to uncover his body. He was a young man of exemplary character, and a workman of experience and courage, but he relied too much on his judgment in this case and committed a fatal mistake, which cost him his life.

Accident No. 25.—William Newberry, a miner, aged 40 years, was instantly killed in the Avondale colliery, Plymouth, May 15. He was working a breast where the coal was twenty-two feet thick, on a grade of about three degrees. While intending to run a loaded car out, he told his son, who was laboring for him, to go down to the gangway for sprags, but just as the boy was starting, a large mass of coal fell from the rib upon the father, killing him instantly. He heard it cracking, but he wanted to get the car away before it fell, and was preparing to do so when he was caught.

He was a widower and had five children, two of whom were working beside the one who labored for him.

Accident No. 35.—Edward Walsh, a miner, aged thirty-seven years, was instantly killed by fall of fire-clay in the No. 2 slope, Nanticoke, July 19th. Throughout this mine the roof consists of a small tier of bone coal, overlaid by a very thick tier of fire-clay, requiring careful propping, and frequently double-timbering to sustain it. In the deceased's chamber, double timber protected the track all they way to the face. A few minutes prior to the accident he and his laborer were working at the face of the breast, when the latter heard the roof working and threatening to fall; he called Walsh's attention to it, and told him to come back from the face. Walsh, having full confidence in the efficacy of the timber, replied that it could not fall, and stood at a point not far back from the face, under the double timber, watching it. Instantly, when the roof gave way, the timber twisted out of place and the unfortunate miner was covered beneath the falling mass. The fallen fire-clay was about six feet thick and covered the breadth of the chamber. The deceased was married and had four children.

Accident No. 36.—Luke O'Brien, a miner, aged fifty years, was killed in the No. 4 shaft, Plymouth, July 22d, under the following circumstances: He was drawing down top coal on an old counter gangway and was working alone on that day, but there were parties working within a few hundred feet from him. The place was about eighteen feet high. He fired a blast in the top coal, which failed to bring down its hold; he then placed a ladder against it, and went on that to either bar down the coal or drill another hole. A party who were unloading a car of rock happened to be not far distant, when they heard something falling in O'Brien's chamber, and saw his

light swinging in the air; they called, but receiving no reply, ran to him and found him lying on the track with a deep wound in his head, and dead. The falling coal had thrown the ladder back with him upon it, and throwing him against the corner of the pillar with such force that his death was caused instantly.

ACCIDENT No. 37.—Hugh Kelley, a laborer, aged forty-eight years, was instantly killed by a fall of rider coal in the Mill Creek Slope, Plains township, August 2. He was laboring in a breast with a miner named Patrick Kerrigan, and while loading a car, near the face, a large fall of rider coal came down upon him, resulting as already stated. Subsequent examination showed that the rider coal, a tier about eight inches thick, had been left to hang all the way back from the face, a distance of fifty feet, without a single prop to support it; expecting it to fall and save the powder required to blast it down. The mining boss was a stranger in this colliery, having just recently taken charge of it. In passing through this chamber on his first trip around the mine, he noticed that there were no props there and ordered the miner to put some up to sustain his roof; he crossed the face of the breast and did not see the edge of the rider coal. The miner replied that the roof needed no props, but the boss repeated his order that he should put them up, and went his way. However, the order was not complied with, and, in a week or so later, the coal fell and killed the laborer, the miner narrowly escaping without injury. This is another instance of recklessness, and another life sacrificed through it. The deceased left a wife and one child.

ACCIDENT No. 39.—William Frederick, a laborer, aged forty years, was killed in the Nottingham shaft, Plymouth, August 3. He was working with a miner named David E. Davies, in a chamber where the vein was twenty-two feet in height. The latter fired a shot in the bottom coal, and both were returning together towards the face when a piece of top coal, measuring eight feet long, four wide, and two feet nine inches thick, fell and struck the laborer and killed him, the miner had a very narrow escape. From all the evidence we could gather, this proved to be purely an accident. The deceased was of Polish nationality, had a wife and one child.

ACCIDENT No. 40.—John Baur, a laborer, aged thirty-five years, was instantly killed in the No. 4 shaft, Plymouth, August 15. He was laboring in a gangway in the seven-foot seam, overlying which is a dangerous tier of fire-clay. In this gangway the fire-clay was all pulled down during this day, except a piece on the left hand side, near the face, which to all appearances was safe for the time being, until the air would have time to disintegrate it, causing it to loosen; but soon after they began to work on the coal, this piece of rock fell, killing the laborer while he was loading coal under it. After it fell a slip was revealed, cutting the rock along over the rib, which was the cause of its falling so unexpectedly. The deceased was married and left a wife with three children.

ACCIDENT No. 42.—Sherman Sorber, a laborer, aged sixteen years, was

instantly killed by a fall of rock in the Salem colliery, Shickshinny, August 18. He was working in a breast with his father, in which the coal was soft and shelly, and could be mined without blasting. The father was picking and the son barring a piece of coal, when a large piece of rotten slate fell out of the roof killing the latter instantly. It was cut all around by seams, and it dropped out of its place without any warning. He was a young man, highly respected, and generally esteemed by those who knew him.

Accident No. 44.—John Murrish, a miner, aged twenty-seven years, was fatally injured in the No. 10 slope, Sugar Notch, September 1, and died the following day.

This slope has a grade of sixty degrees, and is double-timbered from top to bottom. August 22 the rope broke, leaving the cage with a loaded car on it, to run down at a terrific rate, tearing the timber and everything out, causing the roof to fall, and all rushed to the bottom, filling about fifty feet of the slope. After this, the deceased, with several other men, was on top of this debris repairing, when a fall of rock came down upon them. He, Alfred Evans, and Luke Welsh were injured, but the injuries of the last two were not very serious, while his injuries caused his death the following day. It was surprising that any of them escaped, considering the perilous situation in which they were when the rock fell. The deceased was a man highly respected, and a useful member of society, and his demise was generally mourned in the community where he lived. He was married, and had one child.

Accident No. 45.—Alexander Genufski, a laborer, aged twenty-four years, was severely injured in No. 1 slope, Nanticoke, September 4, and died thereof September 6. On this day a miner, named Otto Diedrich, began to work in this mine, and the deceased was with him. The day before this, the mining-boss, when showing the place to Diedrich, called his attention to a space of twelve feet existing between the inner pair of timber and face of gangway, and pointed to a slab of rock which was not safe, telling him to put a pair of timber up to sustain it before attempting to blast coal down. The miner promised to do so, and went to get the timber ready for the next morning. The next day he went to work, but the timber car had not yet arrived at the face of the gangway, and he drilled a hole in the coal and fired it, then allowed his laborer to go under the hanging rock to load the coal, and while thus engaged, the rock fell, injuring him. At first they thought his injuries were only slight, but it proved fatal at the time stated. The deceased had just returned to this country from a visit to Poland, his native country.

Accidents Nos. 49 and 50.—Jacob Clark, a miner, aged thirty-three years, and his laborer, Charles Silvers, aged twenty-four years, were both instantly killed in the No. 1 Red Ash Coal Company's mine, September 19. Both were married, the former having three children, and the latter one. They were living in the same house, and working together in a chamber in the

top split of the Red Ash vein. The roof was not safe, and they were paid for standing props. Late the day before this sad calamity the mining-boss was in their breast, and order them to put up props, and their attention was repeatedly called to their danger by their neighboring miners, one of whom was there half an hour before the accident occurred, and told them it was not safe, and advised them to set props up. They replied, they would do so after firing a shot, but when they were in the act of charging the shot the roof fell, killing both instantly. Although these men were intelligent, respectable and useful members of society, they seemed to court death, so extremely reckless they appeared to be of their safety on this occasion.

ACCIDENT No. 61.—William Simmonton, a driver, aged thirteen years, was instantly killed by a fall of rock, in the Raubville Drifts Mill Hollow, November 3. The facts elicited by investigating this accident proved that the gangways in this mine had not been carefully watched, as the exigencies of the place seemed to demand. This gangway was driven across the face of a series of chambers coming up from another lift. Opposite each chamber a very wide space prevailed, which should have been propped, but was not. The employés having become accustomed to these wide spaces, passed in and out without suspecting any danger. Young Simmonton was driving on this gangway, and was passing in with his mule, when a large area of roof fell on them killing both instantly. Subsequent examination discovered a slip cutting across the breast where the accident occurred, leaving a tier of slate hanging with a loose end right across the gangway. It is unusual to have an accident like this occurring on the main gangways, and with a proper watch, they hardly ever will occur where the roof is regular.

ACCIDENT No. 64.—Patrick Coney, a miner, aged twenty-five years, was almost instantly killed in the Exeter colliery, West Pittson, November 23. He was working in a breast, had nearly finished loading a car, when a piece of the heavy, treacherous black rock fell from the roof and struck him. A neighboring miner heard him call at once, and instantly ran to assist him, but he found him lying on his back dying. There was a piece of rock bearing upon him, which was removed in an instant after the miner got to him, and this was all that had fallen. The deceased was married and had five children depending on him for support.

ACCIDENT No. 67 AND 68.—William Edwards, a miner, aged thirty-three years, and William Costello, a laborer, age twenty-five years, were both instantly killed in the Dodson colliery, Plymouth, December 15. They were employed together with another laborer named Michael Rogan, reopening the plane. [See section of Dodson Colliery Plan, in another part of this report.] This section of the work had recently caved and had completely closed the plane. Edwards and his assistants had just began their shift at 3 o'clock, P. M., and everything appeared all right and safe. The roof consisted of a tier of coal, two feet thick and, usually, was a very

safe top to work under. The sides had all been crushed down and the bottom had heaved until the space was completely filled. Their work was removing this dirt and coal, and put props to support the sides. Williams was in the act of cutting out an old prop in the center of the passage, suspecting no danger, when a large mass of the top coal fell, crushing him and Costello to instant death, and seriously injuring Rogan who, fortunately, happened to be standing almost away from under it. Another miner, who was standing within a few yards of them, saw the accident and immediately called assistance to uncover them, but they worked hard for twenty minutes before this was accomplished. Since the coal was down, a slip was revealed cutting the coal, running parallel with the plane on one side, and another running across, above the point where the men were at work. This accounts for the unusually sudden fall of such a large area of coal, which was fourteen feet wide by twenty feet long. Edwards was married and left a wife with one child.

Accident No. 70.—William P. Dolbear, a miner, aged thirty-three years, was instantly killed by a fall of rock in the Henry shaft, Plains township, December 28.

The deceased, with three other men, were together just starting to drive a slope to the dip of a small basin from the side of a level gangway; had driven across the pillar to the airway; fired a blast in the lowest rib, which discharged a prop and a pair of double timber or couplings. Upon their return after the blast they went to work replacing the timber. The roof was a brittle, dangerous fire-clay, but appeared whole at that point, and they went to work under it without sounding it; and when Dolbear was cleaning room for the prop a small bit of dirt fell on him. Thinking his laborer had thrown it, turned around and asked him; but just as the reply was given a piece of the roof fell on him, resulting as already stated. He was married and had four children.

Fatal Accidents by Falling Down Shafts.

Accident No. 8.—Morris Kisner, a headman, aged eighteen years, was killed in the Woodward shaft, Delaware, Lackawanna & Western Railroad Company, near Kingston, February 23. This is a very large shaft in process of sinking, and was, at this date, at a depth of sixty-nine feet, having two hoisting ways, but having only one rope, which had to be changed from one pulley to the other when needed. Young Kisner was in the act of changing the rope, and had not closed the opening through which the bucket passed the platform, when he, in going past it, stepped in, and fell headlong to the bottom of the shaft.

Accident No. 19.—Samuel Transue, a sinker, aged twenty-two years, was instantly killed by falling down the South Wilkes-Barre shaft, Lehigh and Wilkes-Barre Coal Company, April 13. This shaft was in course of sinking, and the sinkers were engaged timbering. They had a platform made of two-inch plank, eight feet span, about two hundred and fifty feet above the bottom of the shaft. The deceased was standing upon a

bunting five feet above this wedging the timber, and when done, jumped upon the platform, breaking a plank, and passed through to the bottom of the shaft. His lifeless remains were brought out in about fifteen minutes. His co-workmen said he was a very daring, reckless young man at his work, and this last act fully corroborates that statement.

ACCIDENT No. 32.—Conrad Grimmack, a Polish laborer, aged twenty-five years, was instantly killed in the Nottingham shaft, June 21.

He was on the cage ascending the shaft in company with seven other persons, and up about forty feet from the bottom he lost his balance and fell against the side of the shaft, where he was crushed between the cage and siding, and dropped to the bottom dead. It was the work of an instant, and no one could explain how he came to fall on the cage. He had only been in this country three months, two of which he worked in this colliery.

Fatal Accidents by Cars in the Mines.

Sixteen fatal and thirty-nine serious accidents occurred from this cause during this year.

ACCIDENT No. 5.—Edward Hogan, a helper, aged thirteen years, was fatally injured in the Exeter shaft, West Pittston, February 2d, and died during the same night. When the drivers were about starting off the passing-branch with a train of five cars, pulled by a team of three mules, the deceased tried to get on the leading mule's back and failed. After this attempt, the driver ordered him to wait and ride on the hind end of the last car, but instead of that, he attempted to get on the fore end of the first car and slipped, and was instantly struck down by the cars, resulting as stated above.

ACCIDENT No. 6.—Edward Moran, driver, aged fifteen years, was instantly killed in the Mill Creek slope, February 21. He was driving a mule which would sometimes balk and refuse to pull; and he acted thus on the level gangway prior to the accident, when the deceased borrowed a whip from another driver and succeeded in starting him on a sharp gait; the driver then threw the whip back and ran alongside of the car, trying to go by, but before reaching the mule's side fell on the track and was instantly killed by the car running upon him.

ACCIDENT No. 7.—Samuel Pringle, a runner, aged eighteen years, was killed in the No. 5 shaft, Delaware and Hudson Canal Company, Plymouth. February 21.

The deceased was employed in running cars in the Cooper vein, and was running one out of an air-way when, by some manner not definitely known, he fell under the car and was found there dead. He told the miner when starting out, that he was going to do a "sharp trick" that time, but the miner did not understand what he meant by the remark, and said nothing back to him. He told the driver before that, that he was going to run forward to open the door without stopping the car this time, and it was afterwards supposed he did so and fell. The driver cautioned him not to do

it, but the position of his body when found proved conclusively that he did, and lost his life by the foolish experiment.

Accident No. 10.—Daniel Ferry, a leader of team, aged sixteen years, was killed in the Empire colliery, Wilkes-Barre, March 4. He was employed to lead a team of mules and assist the driver working between the passing-branch and head of No. 1 plane; but, contrary to the established rules of the mine, he and another boy named Condy O'Donnell exchanged work for one trip; the latter went out with a train of cars towards the plane, while Ferry hitched a mule to another train of cars which were standing a little distance inside of the passing-branch and started them forward, and while trying to unhitch the mule he fell, the cars passing over him, and dragging him a distance of sixteen feet before those who witnessed the occurrence could stop them; when released and taken up he was dead.

Accident No. 14.—Mathias Doomchus, a Polish laborer, aged thirty-two years, was instantly killed in the Wanamie colliery, March 21. He was laboring in a breast on a counter gangway, where the grade of the track was about six degrees. The runner opened a door ready to run a a train of cars through, and while he was above starting the cars, the deceased came down from his chamber and walked down the run, closed the door and stood below it, evidently not aware of the approaching train of cars, which ran through the door, crushing everything before it and killing him instantly. He was married and had one child.

Accident No. 17.—Daniel L. Davies, a Welsh driver, aged fifteen years, was fatally injured in the No. 1 shaft, Kingston Coal company, April 12, and died in a few hours after. While he was driving a mule, pulling a loaded car to the head of plane, in the act of unhitching him he fell, and the car ran upon him with the result stated.

Accident No. 22.—Thomas Conway, a door-tender, aged fourteen years, was fatally injured in the No. 10 Slope Sugar, Notch, May 1, and died from his injuries May 4. When the accident occurred, he had gone a distance of about forty yards inside of his door, to turn the switch latches before an advancing trip of cars. A car loaded with sills was standing on one track, and the boy, after fixing the latches, stood by this car waiting for the advancing trip to pass, when the first car jumped off the track, and ran upon him, crushing him against the sill car. The officials thought he was not seriously injured, because he climbed into the ambulance right briskly, without assistance, and spoke as though he did not suffer much, but he died unexpectedly at the time stated.

Accident No. 26.—David H. Davies, a door-tender, aged thirteen years, was fatally injured in the Nottingham colliery, Plymouth, May 19, and died therefrom shortly after being taken home. While the driver was up in a breast, for the purpose of running a loaded car down to the gangway, the deceased came back from his door and stood by that breast. He saw the car coming, and hollered on another boy to warn him of its approach,

but in some manner which cannot be explained, he failed to get out of the way himself, and was terribly crushed between the car and the side. He lived only until about three o'clock, P. M., the same day.

ACCIDENT No. 27.—Michael Rider, a door-tender, aged seventy years, was killed on the Hillman Slope, Plains township, June 8, in the following manner: He was attending a door on the slope, and when a car was being pulled up he forgot to open the door until the car was in sight, when he ran and opened it, and again attemped to return, but was caught by the car, and dragged along about thirty feet before it was stopped. Evidently the old man was absent-minded at the time, or he could have easily kept himself safe, for the machinery was small, and the car moved very slowly at all times, and there was plenty of room to get out of the way.

ACCIDENT No. 33.—John Fisher, a driver, aged sixteen years, was killed in the Grand Tunnel, West Nanticoke, June 23. He was employed driving between the plane, in the tunnel, and top of the breaker, and was just starting from the plane with two loaded cars, when the footmen heard him call the mule to stop. This, not being unusual, the footmen did not notice, but in a few minutes after the engineer went by and saw the mule standing quietly, and upon examination, found the boy under the car dead. Evidently he fell in front of the cars just as they started, for they had moved only six feet from where they were at first standing.

ACCIDENT No. 38.—Joseph Pouviski, a laborer, aged thirty years, was killed in a peculiar manner in the No. 2 tunnel, Nanticoke, August 3. He was laboring in a breast with a miner named Edward T. Lewis, and the track was of iron rails, and dipping about three degrees. An empty car was brought in, and Lewis helped the laborer to fasten the brake, and block it at the end of the track. Then Lewis went back to his tool-box, and waited there a little while, and when he returned he found the laborer with his head wedged between the car and face of the breast, dead; the car having moved forward over the end of the track, and caught him in that manner. It was supposed he had loosened the brake, and tried to push the car back, and it proving too heavy, ran forward with the result described. He was married, and had four children.

ACCIDENT No. 40.—Howard Hoffa, a driver, aged fifteen years, was fatally injured at the Exeter colliery, West Pittston, August 9. He was employed driving a team of three mules, and he and the mules were standing on the passing branch near the foot of the shaft, when another driver, with a trip of empty cars, was approaching. He noticed one of his mules in the road, and shouted to it to move on, at the same time touching it with a whip. The mule instantly kicked him, until he fell across the road before the moving cars, which, running upon him, injured him so severely that he died in about two hours after.

ACCIDENT No. 53.—William Williams, a door-tender, aged fourteen years, was instantly killed in the Alden tunnel, September 25. He was at his door inside of the tunnel when the driver passed through it with two

loaded cars. Soon after, he was found lying on the side of the track dead, and his head crushed in a shocking manner. No one saw him being crushed, but it was evident from the marks found on a prop close to where he was found, which also was very close to the track, that his head was crushed between the car and this prop. He evidently tried to get on between the two cars when approaching the prop, and was caught with the result described. Props should never be placed so close to the track as this was, for they are very dangerous and are frequent causes of accidents

Accident No. 58.—William Glover, a rockman, aged thirty years, was fatally injured on the Warrior Run slope, October 24, and died during the same day. He was working on the night shift, in a rock-tunnel, and after completing his night's work came out to the bottom of the slope, where he and two others boarded an empty car and signalled to the engineer to hoist them up. Glover sat on the rope, facing the car, resting his feet on the two bumpers. After waiting a few minutes the car moved, but at this time he was off his guard and fell, the car passing over him before the signal to stop could be given. He was immediately removed to his boarding-house and his injuries attended to; but he died at the time stated. When we consider the perilous situation this man took, it does not surprise us that the accident happened, for it was hardly possible for him to escape when taking such a foolish, reckless risk.

Accident No. 66.—Dennis Falvey, a laborer, aged twenty-four years, was instantly killed in the No. 1 slope, Nanticoke, December 14. He was working in the second lift, west side of the slope, and while going to work in the morning he walked down the travelling way and left some steel drills on top of the slope, with orders to have them sent down in the cars. When he arrived at the bottom of the slope they were hoisting from the upper lift, and he told the driver to call the footman and tell him to send a message to the top, requesting them to send down the drills. Immediately after this he ran up the slope, and just as he was turning into the upper lift a runaway car came down, turning into that lift, and striking against the loaded cars standing on the branch, behind which he had gone for shelter, and was crushed between those cars and rib to instant death. The car ran down through the carelessness of the young man attending the top of the slope, but, of course, he was not aware of the presence of the deceased, who was violating the rules of the colliery by walking up the slope.

Accident No. 72.—Thomas Hughes, a driver, aged thirty years, was fatally injured by cars, in the Prospect colliery, December 29. When the accident occurred, he was bringing a loaded car out of an airway, having a clear level road, and by some mishap, fell before it, the car running upon him, crushing several ribs and forcing them into his lungs. The airway workmen happened to be following not far behind, heard the car stopping, and ran to his assistance at once, and found him lying across the track, jammed before the wheels under the car. His injuries proved fatal a few hours after, at the hospital.

ACCIDENT No. 73.—John Crow, a brakeman, aged eighteen years, was instantly killed by the locomotive, at the Hartford colliery, December 30. He was employed assisting the locomotive runner, hauling cars from the slopes to the breaker and back, and prior to the accident, was riding with the engineer on the front end of the locomotive, going towards the new slope until, upon coming near the switch, he stepped off before the engine and fell, when being only about two feet ahead; the engine ran upon him in an instant, before the engineer had time to reverse the valve, and he was dead when taken up after the locomotive had passed over him. The engine was running slow, but he must have stepped on a piece of coal or something, which threw him down so close to the engine that the accident was inevitable.

Fatal Accidents by Explosion of Powder and Blasts.

There were twenty serious accidents from the above cause, eight of which proved fatal. As revealed by investigation into the circumstances surrounding each case, it becomes evident that they nearly all occur owing to too much haste, and impatience of the victims. Occasionally one occurs under circumstances which could not be foreseen, but these, we must confess, happen very rarely, as compared to the total number of this class of casualties. The fatal ones are described in the following pages, under their respective numbers.

ACCIDENT No. 16.—William Brenner, a miner, aged forty-five years, was injured in the Diamond shaft, Wilkes-Barre, March 30. He was working an airway, and when about firing a blast, cut the match so short that he had no time to retire to a safe place before it exploded, throwing the coal upon him, breaking some of his ribs and cutting him around his head. He walked home with little assistance, and seemed to recover all right; but getting to feel pretty good in a few days, contrary to the orders of his medical attendant, insisted on walking around the house, and on the 8th of April he took the train intending to visit his friends at Audenreid, but died at Penn Haven Junction while on the way. The doctor warned him against undertaking the journey, and told him it might cause his death, but he did not heed the warning, and the predictions of the doctor were proven true, at the time and place stated.

ACCIDENT No. 28.—James Spellman, a miner, aged forty years, was fatally injured in the Henry colliery, June 13, and died the same day. He was working a chamber, having his brother laboring for him. Both together prepared a blast ready for fire, when the laborer retired with the tools to a safe place, expecting the miner to follow after firing the match; but, to his surprise, the blast fired before the miner moved from the face, and he was found after that among the loose coal, having been thrown completely across the breast. Measures were taken at once to take him home and get medical aid, but his injuries proved fatal in two hours after the occurrence. The writer failed to ascertain the cause of the blast firing so unexpectedly, as the witnesses could throw no light on the case further than is given above. The deceased was married and had five children.

Accident No. 43.—Frederick Metzgar, a miner, aged thirty-five years, was killed in the Prospect shaft, August 29. He was opening a chamber from the side of the gangway, and was assisted by his laborer in charging a hole ready to blast, when the latter retreated and went on to the face of the gangway to wait the blast. The hole missed fire the first time, and another squib was tried. After waiting about the usual time the miner concluded it had missed again, and went on to try another squib, but when he was approaching the face the blast fired, throwing the coal about, and injuring him so severely that he died in a few minutes. He was using the old customary straw squib and cotton match, which are considered very safe, but he was probably too impatient to wait long, being aggravated by the failure of the blast firing the first time. He was married, and left a wife with one child.

Accident No. 56.—Martin Schultz, a miner, aged fifty-six years, was instantly killed in the No. 4 shaft, Plymouth, October 4.

The deceased was working a breast, and a counter gangway was being driven by Robert C. Mayer bisecting these breasts. When this gangway was approaching the deceased's place the mining-boss told him, and cautioned him to be careful and get out of the way when they would be blasting in the gangway, as he expected they would break through shortly. The miner was a Polander, and did not understand English, but the mining-boss spoke German, which he appeared to understand better. He was told that the gangway men would tap on the coal when they were ready to fire, and that he should tap back to let them know he heard them, and then depart to a safe place; but he did not carry out these instructions. When the gangway men tapped they received no response, and thinking the man must be out of his breast fired the blast. Thus it was until the third hole was fired, which blew through into the deceased's place and killed him, he not having gone out of the way as directed. He was married and had one child.

Accident No. 57.—Anthony Gnieff, a laborer, aged twenty-five years, was instantly killed in the No. 4 tunnel, Nanticoke, October 9.

The miner had drilled a hole to blast down a thin bench of top coal, and the deceased was assisting him to charge it. When they had about two or three inches of tamping on the powder it exploded, blowing a part of the mouth of the hole out, and killing the laborer instantly. The miner escaped without injury.

Accident No. 63.—David R. Morgan, a miner, aged thirty-two years, was fatally injured in the Warrior Run colliery, November 6. His breast was rising on a pitch of twenty-five degrees, and he had no loose coal within ten feet to the face of it. He prepared a blast in the middle bench, about three feet from the ground, and applied a touch-squib to fire it. Believing that it had "missed," was returning to try another, but, when within ten feet of the hole, it exploded, throwing the coal with terific force against his side, crushing his arm and leg. He was taken to the hospital, where both limbs were amputated, hoping thereby to save his life, but he failed

to survive the shock, and died November 10, leaving a wife with five children to mourn their loss.

ACCIDENT No. 65.—John Lavelle, a miner, aged thirty-five years, was instantly killed in the Conyngham shaft, November 29.

John Bunson and the deceased, both miners, were working a breast together, and had drilled a hole up through the blacksmith tier, a bench of coal about two feet thick, the hole being nearly vertical up through it, close to the solid face. After charging it, applied the match and retreated to the cross-heading, where they waited a short while expecting it to explode, but, thinking it unusually long, Lavelle returned to try another squib. A flame was burning at the end of the tube, which he thought was gas burning, and upon approaching near enough, he took his hat to extinguish it, when the blast fired, bringing the coal down upon him, killing him instantly. He was a miner of considerable experience, but he did not exercise enough precaution in this instance, when returning to an unexploded blast fraught with so much danger. He was married, and left a wife with three little children to mourn their loss.

ACCIDENT No. 69.—William J. John, a miner, aged thirty-three years, was severely burned by an explosion, of powder in the No. 2 shaft, Nanticoke, early in the morning of December 25. While preparing a small charge of powder, a spark blew from his lamp and exploded a whole keg-full, burning him so as to cause his death during the same day. He was married and had three children.

Fatal Accidents from Miscellaneous Causes in and Around the Mines.

ACCIDENT NOS. 2, 3, AND 4.—Samuel Morris, a miner, aged twenty-seven years, William M. Hughes, a miner, aged thirty years, and John Davies, a laborer, aged twenty-two years, were all suffocated in the No. 1 shaft, Nanticoke, January 23. About eight o'clock, A. M., a shot was fired in the face of the gangway, from which the gas-blowers took fire, and when the hose was applied to extinguish it, they discovered that they had no water. Consequently, the fire increased by setting the brattice and timber on fire and consuming every combusible thing in the gangway. The gaseous products of this combustion was conveyed with the air-current into another section of the work, where about fifteen persons were employed in different chambers. These persons were accustomed to smell the fumes of these fires after nearly every blast fired in the gangway, but they usually ceased in about twenty-five minutes at the longest. This time they expected the same, and waited as long as they could before retreating to purer atmosphere, and the three named above fell on the way and were suffocated. All the men suffered more or less from the poisonous effects of the noxious air, and their comrades' absence was not discovered for an hour after the others escaped. They had two ways to come out, and the parties at each way supposed the missing ones had gone the other way, and thus thought that all the men were out and safe. When it was discovered that these were missing, the smoke and gases were so dense that it was impossible

for any person to enter that section of work where they were supposed to be, without manipulating the air-current, so as to clear the smoke and poisonous to an extent, that a person could live in it. By the time this was accomplished two hours more elapsed, when the bodies of the missing persons were found at different points on the gangway, with life extinct beyond redemption. The position in which they were found, showed that they fell while making efforts to escape, but having staid too long before starting, expecting the gases to cease coming, as usual.

The water stopped because the pipes were frozen in the shaft. The fireboss was supposed to examine the pipe and see that the water was running while making his morning examination, but that was forgotten this morning. The miner who worked in the gangway was cautioned against firing a shot unless he was sure the water was all right, ready to extinguish the blowers should they ignite; but he fired one this morning without exercising that precaution. Thus it was proven that the mine was very loosely governed. They were depending on a pump to supply the water, and the boss, if he gave it a thought, must have conceived the liability of the water failing at any moment, and knowing the dangerous situation of the workmen in the return air-course, should have made provision to notify them in case they in the gangway failed to extinguish the fire in the usual time. All this had been overlooked or neglected, and everybody left to care for himself should this occurrence arise. The natural consequence of such loose and inefficient management was this sad casualty, in which three persons lost their lives.

For further account of the fire and its results, see another part of this report.

Samuel Morris was married, and had three children; Wm. Hughes was also married, having a wife and one child.

Accident No. 11.—Henry Evans, a slatepicker, aged thirteen years, was killed in the Baltimore Tunnel Breaker, March 6th. His lifeless body came out of the dirt-chute with indications upon it that he had been killed in in some manner by the machinery. For a few minutes, shortly prior to this discovery the breaker was waiting for coal, during which time the machinery was continually in motion, and the boys, as usual on such occasions, playing at various points in the building. One boy saw the deceased playing at the Shaker Screens, which were oscillating right over the chute in which the body was after that discovered, and this was all the information obtained regarding the cause of the accident. But it was evident that he was injured by the oscillating screen, and dropped down into the chute. This screen was in an out-of-the-way place, where he had no business to go, and where no one would suspect a boy would go into.

Accident No. 12. James Pearce, a sinker, aged forty years, was fatally injured in the Woodword shaft, Kingston, March 7th, and died shortly after reaching home. This shaft was sunk to a depth of about eighty feet when the accident occurred, and the deceased was the chargeman or leader

of the shift. They had a large loose piece of rock in the bottom of the shaft, lying several feet from the direct line of the rope. Pearce lashed this with a chain and fastened the rope to hoist it. Over their heads, up forty feet in the shaft, there were several buntings across the center of the shaft, and while the rope was pulled so far from its line it was bearing upon the lowest bunting, and upon starting the engine two of these gave way and fell to the bottom, injuring Pearce with the result stated above. There were ten persons in the shaft at the time, but fortunately, he alone was injured. To lash a stone to be hoisted out of a shaft is always dangerous, but lashing one lying fifteen feet from the line and the rope bearing against dove-tailed buntings, was indeed recklessness.

Pearce was a widower, and left two orphan children, who had been tenderly cared for while he was living, but now left to the care and charity of friends.

ACCIDENT No. 18.—Elmer Kreidler, a slate picker, aged fourteen years, was killed in the Hartford breaker, Ashley, April 12. He was an ingenious boy, with mechanical turn of mind, and, contrary to the rules of the breaker, went over the railing surrounding some of the pulley wheels, and fixed a small spool to a post, and a string around it and around one of the revolving shafts. And while thus amusing himself in a secluded part of the building, his clothing caught in the machinery, dragging him around the shafting, and was instantly killed. Thus his ingenuity led him to a trap which destroyed him by ending his young and promising life.

ACCIDENT No. 21.—John Winn, a sinker, aged thirty-six years, was fatally injured in the No. 11 or Lance air shaft, Plymouth, May 1. At six o'clock, A. M., he was at work on a platform in the shaft cutting a hitch for a bunting, when a small stone fell from above, striking him on his head. He fell into the arms of his partner, John Rowe, and remained unconscious till four o'clock, P. M., the same day, when he died, leaving a wife, but no children.

ACCIDENT No. 34.—John E. Cook, a mining boss, aged forty-six years, met with a serious accident on the Mill Creek slope, July 8. He had charge of the inside work of this colliery, and was walking down the slope in the morning at a point near the tenth lift. At the same time a trip of cars was being pulled up from that lift; the first car, jumping off the track, ran against a post, and the increased strain on the rope snapped the vertical pulley off, leaving the rope to swing against the side where Cook happened to be standing. Both legs were broken and shockingly crushed below the knees. The following day one of his limbs was amputated, and the hope of saving either was very meager, owing to their shattered condition. He was not a strongly constituted man, and the shock proved too great for his system to sustain it. Death released him from his pain July 10, the second day after the accident. He left a wife with four children.

ACCIDENT No. 54.—Albert Edgar Phillips, a slate picker, aged only nine years, was instantly killed in the Gaylord breaker, Plymouth, September

28. About three o'clock in the afternoon the tipple was broken and no coal passing through the breaker, during which time the boys were all playing in various points of the building. The deceased and another boy were chasing each other around a railing inclosure in which a belt was traveling at the rate of twelve hundred feet per minute. During the excitement of the chase, to cut a short course, he crawled across under the railing and thoughtlessly caught in the belt, which, in an instant, carried him down to the lower floor, passing him under a pulley through a space only four by fourteen inches, leaving his body on the other side crushed to death.

Accident No. 55.—Rees Thomas, a rockman, aged twenty-one years, was fatally injured in the Hollenback shaft, Wilkes-Barre, October 4. He was employed with a number of others driving a rock tunnel in this mine, and while exploding a round of shots, had retired to a point at the mouth of the tunnel, behind a door. In the interim of their absence from the face of the tunnel a small quantity of gas accumulated in the roof, and when the battery was applied and the shots exploded, the gas also exploded; the concussion blowing the door open with great force, jamming Thomas' head severely against the side, causing injuries which resulted in his death October 13.

Accident no. 62.—Benjamin Sheridan, a slatepicker, aged sixteen years, was killed in the Nottingham breaker, Plymouth, November 6. He was employed one story higher than the one where he was killed, and was on his way down so as to be out of the breaker by the time the whistle would signal quitting time, when the accident occurred. The young man who was attending the rollers thought they were blocked, and signalled the engineer to stop the machinery. He then raised the covers to look upon the rollers, and seeing they were not blocked, turned around to signal the engineer to run on. He still held the cover up, and during this time the deceased came unexpectedly and stepped into the hole upon the rollers. The machinery was stopped as soon as possible, but his life was extinct before he was extricated. He had come down through a prohibited way, and fell into the rolls before the attendant saw him, when it was too late to save his life.

Accident No. 71.—Albert Smith, a sinker, aged forty-seven years, was fatally injured in the Schooley shaft, near Wyoming, December 28. The accident occurred about half past three, A. M., and he died about half past four, P. M., the same day. While he was working in the bottom of the shaft, sinking, the bucket, in some unaccountable manner, became detached from the rope at the top, and fell down, striking the bottom and rebounding against the deceased, with the effect already noted. The deceased was married, but his children were all grown to be able to care for themselves.

This ends the chapter of fatal accidents for the year 1882, and a perusal of the foregoing accounts of them could not fail to produce good effect on those directly connected with the mining of anthracite coal.

TABLE No. 5—*A list of accidents resulting in death in the Middle District of Luzerne, for the year ending*

DATE.	No. of accidents.	Names of Persons Killed.	Age.	Widows.	Orphans.	Nationality	Occupation.	Names of the Collieries.
Jan. 16	1	Joseph Badman,	42	1	6	English,	Fire boss,	No. 5 Shaft, Plymouth,
23	2	Samuel Morris,	27	1	3	Welsh,	Miner,	No. 1 Shaft, Nanticoke,
23	3	William M. Hughes	30	1	1	Welsh,	Miner,	No. 1 Shaft, Nanticoke,
23	4	John Davies,	22			Welsh,	Laborer,	No. 1 Shaft, Nanticoke,
Feb. 2	5	Edward Hogan,	13			Irish,	Helper,	Exeter Shaft,
21	6	Edward Moran,	15			Irish,	Driver,	Mill Creek Slope,
21	7	Samuel Pringle,	18			American,	Runner,	No. 5 Shaft, Plymouth,
23	8	Morris Kisner,	18			American,	Head man,	Woodward Shaft,
Mar. 2	9	William Singen,	28	1		Irish,	Miner,	No. 3 Shaft, Plymouth,
4	10	Daniel Ferry,	16			Irish,	Mule leader,	Empire Shaft,
6	11	Henry Evans,	13			Welsh,	Slate picker,	Baltimore Tunnel Breaker,
7	12	James Pearce,	40		2	English,	Sinker,	Woodward Shaft,
17	13	John Lathan,	35	1		English,	Miner,	Midvale Slope,
21	14	Mathias Doomchus,	32	1	1	Polish,	Laborer,	Wanamie Slope,
25	15	William Scoble,	35	1	3	English,	Miner,	Laurel Run Slope,
30	16	William Brenner,	45			Irish,	Miner,	Diamond Shaft,
April 12	17	Daniel L. Davies,	15			Welsh,	Driver,	No. 1 Shaft, Kingston,
12	18	Elmer Kreidler,	14			American,	Slate picker,	Hartford Breaker,
13	19	Samuel Transue,	22			American,	Sinker,	South Wilkes-Barre Shaft,
24	20	Alfred Treglown,	33	1	4	English,	Rock man,	No. 2 Shaft, Nanticoke,
May 1	21	John Winn,	36	1		English,	Sinker,	Lance Air-Shaft,
1	22	Thomas Conway,	14			Irish,	Door boy,	No. 10 Slope, Sugar Notch,
3	23	Felix Conway,	48	1	3	Irish,	Laborer,	Enterprise,
3	24	David R. Phillips,	25			Welsh,	Miner,	Diamond,
15	25	William Newberry,	40		5	Welsh,	Miner,	Avondale,
19	26	David H. Davies,	13			Welsh,	Door boy,	Nottingham,
June 8	27	Michael Rider,	70			Irish,	Laborer,	Hillman,
13	28	James Spellman,	40	1	5	Irish,	Miner,	Henry Shaft,
15	29	James Carey,	21	1		Scotch,	Sinker,	Stanton Air-Shaft,
15	30	Henry Hughes,	23			Irish,	Sinker,	Stanton Air-Shaft,
15	31	Edward Finnegan,	50			Irish,	Sinker,	Stanton Air-Shaft,
21	32	Conrad Grimmack,	25			Polish,	Laborer,	Nottingham,
23	33	John Fisher,	17			American,	Driver,	Grand Tunnel,
July 8	34	John E. Cook,	46	1	4	English,	Mine boss,	Mill Creek Slope,
19	35	Edward Welsh,	37	1	4	American,	Miner,	No. 2 Slope, Nanticoke,
22	36	Luke O'Brien,	50			Irish,	Miner,	No. 4 Shaft, Plymouth,
Aug. 2	37	Hugh Kelley,	48	1	1	Irish,	Laborer,	Mill Creek Slope,
3	38	Joseph Povurski,	25	1	4	Polish,	Laborer,	No. 2 Tunnel, Nanticoke,
3	39	William Frederick,	40	1		Polish,	Laborer,	Nottingham,
9	40	Thomas Hoffa,	15			American,	Driver,	Exeter,
15	41	John Baur,	35	1	3	German,	Laborer,	No. 4 Shaft, Plymouth,
18	42	Sherman Sorber,	17			American,	Laborer,	Salem,
29	43	Fred Metzgar,	35	1	2	German,	Miner,	Prospect,
Sept. 1	44	John Murrish,	27	1	1	English,	Miner,	No. 10, Sugar Notch,
4	45	Alex. Genufski,	25			Polish,	Laborer,	No. 1 Slope, Nanticoke,
5	46	Benjamin Reiley,	22			Irish,	Runner,	Wyoming Shaft,
6	47	Peter O'Neil,	33	1	3	Irish,	Miner,	Conyngham,
6	48	George Pheobish,	40	1	5	German,	Laborer,	Conyngham,
19	49	Jacob Clark,	33	1	3	English,	Miner,	No. 1, Red Ash Coal Co.,
19	50	Charles Silvers,	24	1	1	English,	Laborer,	No. 1, Red Ash Coal Co.,
25	51	Thomas Cape,	51	1	1	English,	Fire boss,	Dodson Shaft,
25	52	John Race,	29	1	1	American,	Miner,	Dodson Shaft,

zerne and Carbon counties, Pennsylvania, with remarks on the cause of each acci-ing December 21, 1882.

Remarks on the Causes of the Accidents.	CAUSES OF THE ACCIDENTS.							No. of accidents.
	Explosions of CH4 gas.	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosions of powder and blasts.	Miscellaneous und.r-ground.	On surface.	Total.	
Instantly killed by a fall of rock from the roof,	. .	1	.	. .	. .	. .	. .	1	1
All were suffocated by fumes and gases arising from a fire in the face of the gangway and conveyed by the air-current into the chambers where they were working,	. .	. .	. .	. .	. .	. .	. .	. .	2
	. .	. .	. .	. .	. .	. .	. .	. .	3
	. .	. .	. .	. .	. .	3	. .	3	4
Attempted to ride on front end of car; fell, and was fatally injured; died the same day,	. .	. .	. .	1	. .	. .	. .	1	5
Fell under a loaded car and was instantly killed,	. .	. .	. .	1	. .	. .	. .	1	6
Fell under a loaded car and was instantly killed,	. .	. .	. .	1	. .	. .	. .	1	7
Instantly killed by falling down the shaft, a depth of sixty-nine feet,	. .	. .	1	. .	. .	. .	. .	1	8
Instantly killed by a fall of rider coal,	. .	1	. .	. .	. .	. .	. .	1	9
Fell under loaded cars and was instantly killed,	. .	. .	. .	1	. .	. .	. .	1	10
Was found in a dirt chute in the breaker, dead; supposed to have been killed while playing with the machinery,	. .	. .	. .	. .	. .	. .	1	1	11
Killed by a bunting getting loose and falling upon him in the shaft,	. .	. .	. .	. .	. .	1	. .	1	12
Fatally injured by a fall of rock; died in two hours after the accident,	. .	1	. .	. .	. .	. .	. .	1	13
Instantly killed by falling under a train of loaded cars,	. .	. .	. .	1	. .	. .	. .	1	14
Fatally burned by an explosion of gas; died March 26,	1	. .	. .	. .	. .	. .	. .	1	15
Injured by a blast, having cut the match too short; died April 8,	. .	. .	. .	. .	1	. .	. .	1	16
Fatally injured by falling under a loaded car; died in a few hours after,	. .	. .	. .	1	. .	. .	. .	1	17
Instantly killed by playing with the machinery,	. .	. .	. .	. .	. .	. .	1	1	18
Instantly killed by falling through a platform down into the shaft,	. .	. .	1	. .	. .	. .	. .	1	19
Instantly killed by a fall of rock in the new tunnel,	. .	1	. .	. .	. .	. .	. .	1	20
Fatally injured by a small stone falling upon him in the shaft,	. .	. .	. .	. .	. .	1	. .	1	21
Collar bone broken by being crushed between cars: died May 4,	. .	. .	. .	1	. .	. .	. .	1	22
Killed by a fall of fire-clay and rider coal,	. .	1	. .	. .	. .	. .	. .	1	23
Instantly killed by a fall of coal,	. .	1	. .	. .	. .	. .	. .	1	24
Instantly killed by coal falling from the breast rib,	. .	1	. .	. .	. .	. .	. .	1	25
Fatally injured by falling under car; died during the same day,	. .	. .	. .	1	. .	. .	. .	1	26
Killed by a car running upon him on the slope,	. .	. .	. .	1	. .	. .	. .	1	27
Instantly killed by a premature blast,	. .	. .	. .	. .	1	. .	. .	1	28
Instantly killed by falling off the bucket into the shaft in an explosion of gas,	. .	. .	1	. .	. .	. .	. .	1	29
Fatally burned by an explosion of gas while descending the shaft on the bucket,	1	. .	. .	. .	. .	. .	. .	1	30
Fatally burned by an explosion of gas while descending the shaft on the bucket,	1	. .	. .	. .	. .	. .	. .	1	31
Instantly killed by falling off the cage while ascending the shaft,	. .	. .	1	. .	. .	. .	. .	1	32
Instantly killed by falling under loaded cars,	. .	. .	. .	1	. .	. .	. .	1	33
Fatally injured by being struck with the rope while walking down the slope,	. .	. .	. .	. .	. .	1	. .	1	34
Instantly killed by a large fall of roof,	. .	1	. .	. .	. .	. .	. .	1	35
Instantly killed by a fall of coal,	. .	1	. .	. .	. .	. .	. .	1	36
Instantly killed by a fall of rider coal,	. .	1	. .	. .	. .	. .	. .	1	37
Killed by having his head crushed between a car and face of chamber,	. .	. .	. .	1	. .	. .	. .	1	38
Instantly killed by a fall of top coal,	. .	1	. .	. .	. .	. .	. .	1	39
Was fatally injured by being kicked by a mule until he fell under cars; died in two hours,	. .	. .	. .	1	. .	. .	. .	1	40
Instantly killed by a fall of rock,	. .	1	. .	. .	. .	. .	. .	1	41
Instantly killed by a fall of rock,	. .	1	. .	. .	. .	. .	. .	1	42
Killed by a blast while returning to relight the match, thinking it was "missed fire,"	. .	. .	. .	. .	1	. .	. .	1	43
Fatally injured by a fall of rock while repairing on the slope; died September 2,	. .	1	. .	. .	. .	. .	. .	1	44
Fatally injured by a fall of rock; died September 6,	. .	1	. .	. .	. .	. .	. .	1	45
Severely burned by an explosion of gas; died September 8,	1	. .	. .	. .	. .	. .	. .	1	46
Burned by an explosion of gas; died September 21,	1	. .	. .	. .	. .	. .	. .	1	47
Face and hands severely burned by an explosion of gas; died September 11,	1	. .	. .	. .	. .	. .	. .	1	48
Instantly killed by a fall of rock,	. .	1	. .	. .	. .	. .	. .	1	49
Instantly killed by a fall of rock,	. .	1	. .	. .	. .	. .	. .	1	50
Killed by an explosion of carbureted hydrogen gas,	1	. .	. .	. .	. .	. .	. .	1	51
Killed by an explosion of gas,	1	. .	. .	. .	. .	. .	. .	1	52

TABLE No. 5—

DATE.	No. of accidents.	Names of persons killed.	Age.	Widows.	Orphans.	Nationality	Occupation.	Names of the Collieries.
Sept. 25	53	William Williams,	14	. .	. .	Welsh, . .	Door-boy, . .	Alden, ...
28	54	Albert E. Phillips,	9	. .	. .	Welsh, . .	Slate picker,	Gaylord, ...
Oct. 4	55	Rees Thomas, . . .	21	. .	. .	Welsh, .	Rock man, . .	Hollenback, ...
4	56	Martin Shultz, . .	56	1	1	Polish, . .	Miner, . . .	No. 4 Shaft, Plymouth, . .
9	57	Anthony Gneiff, . .	25	1	3	Polish, .	Laborer, . .	No. 4 Tunnel, Nanticoke,
24	58	William Glover, . .	30	.	. .	English, .	Rockman, . .	Warrior Run, ...
27	59	Gavin Burt, ...	23	. .	. .	Scotch, . .	Track layer, .	Pine Ridge Shaft, ...
27	60	Peter Lamb, . . .	20	. .	. .	Irish,	Helper, . . .	Pine Ridge Shaft, ...
Nov. 3	61	Wm. Simonton, .	13	. .	. .	American,	Driver, . .	Raubville Drifts, ...
6	62	Benj. Sheridan, .	16	. .		Irish, . .	Slate picker,	Nottingham Breaker, . . .
6	63	David R. Morgan,	32	1	5	Welsh, . .	Miner, ...	Warrior Run, ...
23	64	Patrick Cooney, .	45	1	5	Irish, . .	Miner, ...	Exeter, ...
29	65	John Lavelle,	35	1	3	Irish, . . .	Miner, ...	Conyngham, ...
14	66	Dennis Falvey, .	24			Irish, . .	Laborer, . . .	No. 1 Slope, Nanticoke, . .
15	67	William Edwards,	33	1	1	Welsh, . .	Miner, . . .	Dodson Shaft, ...
15	68	William Costello, .	25		.	Irish, . .	Laborer, . . .	Dodson Shaft, ...
25	69	William J. John, .	33	1	3	Welsh, .	Miner, ...	Shaft No. 2, Nanticoke, . .
28	70	William Dolbear, .	32	1	4	English, .	Miner, ...	Henry, ...
28	71	Albert Smith, . .	47	1	.	American,	Sinker, ...	Schooley Shaft, ...
29	72	Thomas Hughes, .	30	. .		Welsh, . .	Driver, ...	Prospect, ...
30	73	John Crow, ...	18	. .		American,	Brakeman, . .	Hartford, ...
		Totals, ...		35	91			

Continued.

Remarks on the Causes of the Accidents.	CAUSES OF THE ACCIDENTS.								No. of accidents.
	Explosions of CH4 gas	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosions of powder and blasts.	Miscellaneous underground.	On surface.	Total.	
Instantly killed by being caught between a car and prop,				1				1	53
Instantly killed by playing with machinery in the breaker,							1	1	54
Severely struck upon his head by a door blown by an explosion of gas,						1		1	55
Instantly killed by blast bursting through the pillar from an adjoining gangway,					1			1	56
Instantly killed by a blast exploding while it was being charged,					1			2	57
Fatally injured by falling under a car, while riding up the slope; died October 24,				1				1	58
Both killed by an explosion of gas, having gone into old workings to raise old strap iron, and coming in contact with gas,	1								59
	1							2	60
Instantly killed by a fall of roof while going in on the gangway,		1						1	61
Instantly killed by falling into the rolls,							1	1	62
Severely injured by a blast; arm and leg were amputated, and he died at the hospital, November 10,					1			1	63
Instantly killed by a fall of a piece of black rock upon him,		1						1	64
Instantly killed, returning to charge a squib, the blast exploded,					1			1	65
Instantly killed by a runaway car on the slope,				1				1	66
Both instantly killed by a fall of top coal while at work reopening the plane, after it caved in, during a crushing of the mine,		1							67
		1						2	68
Fatally burned by an explosion of powder; died the same day,					1			1	69
Instantly killed by fall of rock while replacing discharged timber,		1						1	70
Fatally injured by bucket falling down the shaft, and bounding against him,						1		1	71
Fatally injured, falling under a loaded car; died a few hours after,				1				1	72
Killed instantly by falling under the mine locomotive on bank,							1	1	73
Totals,	10	22	4	16	8	8	5	73	

TABLE No. 6.—*A list of serious, but non-fatal, accidents in the Middle district of accident, for the year*

DATE.	No. of accidents.	Names of Persons Injured.	Age.	Wife.	Children.	Nationality	Occupation.	Names of the Collieries.
Jan. 4	1	Wm. Mulherrin,	40	1	2	Irish,	Miner,	Black Diamond,
4	2	Silas Everett,	13			American,	Slate-picker,	Laurel Run slope,
6	3	William Grady,	31	1		Irish,	Footman,	Enterprise,
11	4	George Shelley,	38	1		American,	Engineer,	Nottingham,
14	5	John McNellis,	50	1	2	Irish,	Laborer,	Franklin,
16	6	Thos. E. Williams,	53	1	2	Welsh,	Miner,	No. 3, Plymouth,
16	7	George Scotch,	26	1		Hungarian	Laborer,	Nottingham,
16	8	Horace Gilson,	48	1	4	English,	Bratticeman,	No. 5, Plymouth,
18	9	Thomas Ford,	45	1		Irish,	Miner,	Tunnel No. 2, Nanticoke,
18	10	Edward E. Jones,	24	1	2	Welsh,	Miner,	No. 1 shaft, Kingston,
19	11	John Kelley,	65	1	5	Irish,	Laborer,	Laurel Run,
19	12	David Hendon,	23			Welsh,	Miner,	Slope No. 2, Nanticoke,
20	13	Michael Sheridan,	14			Irish,	Driver,	No. 1 shaft, Kingston,
25	14	Hugh Burns,		1	4	Irish,	Miner,	Mineral Spring,
25	15	David J. Edwards,	30	1	1	Welsh,	Miner,	Empire,
Feb. 3	16	September Nesbitt,	24	1	1	English,	Driver-boss,	Hollenback,
3	17	John Lally,	34	1		Irish,	Miner,	Hollenback,
13	18	Michael McDermott	30	1		Irish,	Miner,	Conyngham,
14	19	Patrick Green,	39			Irish,	Miner,	Hartford,
15	20	Frederick Roper,	18			English,	Runner,	No. 9, Sugar Notch,
15	21	George Burns,	25			Irish,	Laborer,	Exeter,
20	22	Walter May,	17			English,	Driver,	Dodson,
20	23	John B. Davies,	17			Welsh,	Driver,	No. 1 shaft, Kingston,
22	24	John Ryan,	24			Irish,	Laborer,	Prospect,
22	25	Thomas Howells,	35	1	2	Welsh,	Miner,	Prospect,
March 1	26	James McGraw,	24			Irish,	Miner,	No. 10, Sugar Notch,
1	27	Thomas J. Lewis,	23			Welsh,	Miner,	Empire,
3	28	Patrick Kearney,	40	1	7	Irish,	Sinker,	Woodward,
7	29	Patr'k McDermott,	32	1	3	Irish,	Miner,	Conyngham,
8	30	John Nelson,	29			Swede,	Laborer,	Prospect,
8	31	August Nelson,	19			Swede,	Laborer,	Prospect,
14	32	Patrick Gallagher,	40	1	4	Irish,	Miner,	Hollenback,
14	33	William Brennen,	46			Irish,	Door-tender,	No 4, Plymouth,
25	34	James C. Williams,	43	1	2	Welsh,	Fire-boss,	Laurel Run,
25	35	James Ashford,	38	1	2	Welsh,	Miner,	Laurel Run,
27	36	Otto Karmlski,				Polander,	Laborer,	Slope No. 4, Nanticoke,
30	37	Thomas Morgan,	25			Welsh,	Miner,	Diamond,
30	38	Joseph Williams,	23			English,	Miner,	Diamond,
31	39	Jacob Davies,	17			Welsh,	Driver,	No. 5, Plymouth,
April 1	40	Peter Johnson,	22			Swede,	Laborer,	Diamond,
5	41	Evan Harris,	40			Welsh,	Miner,	Diamond,
12	42	John Falty,	45	1	8	English,	Miner,	No. 2 shaft, Nanticoke,
13	43	John Feeley,	35	1	4	Irish,	Miner,	Nottingham,
13	44	Chas. Puterbaugh,	36			American,	Laborer,	Chauncey,
17	45	Michael Supker,	32			Hungarian	Laborer,	Mill Creek slope,
17	46	John James,	47	1	5	English,	Miner,	Hartford,
17	47	David Howard,	21			American,	Footman,	No. 10, Sugar Notch,
20	48	Michael Tucker,	50	1		Irish,	Miner,	Empire,
20	49	Patrick Rooney,	30	1	1	Irish,	Driver-boss,	Hartford,
21	50	John Coyle,	17			German,	Driver,	Diamond breaker,
21	51	Samuel Hurst,	35			English,	Miner,	No. 10, Sugar Notch,
22	52	Condy McDonald,	15			Irish,	Driver,	Empire,
24	53	William Macaffee,	15			American,	Driver,	Forty Fort,
24	54	Martin Kurzowski,	40	1	4	Polish,	Rockman,	No. 2 shaft, Nanticoke,
26	55	John McBride,	19			American,	Driver,	Empire breaker,
26	56	Frederick James,	13			Welsh,	Door-boy,	Harry E,
May 12	57	John Walter,	31	1		German,	Laborer,	No. 4 slope, Nanticoke,
15	58	Andrew Roman,	45			Polish,	Laborer,	No. 4 slope, Nanticoke,
15	59	Jesse L. Simpson,	45	1	4	American,	Miner,	No. 2. Kingston,
15	60	Edward Bennett,	26	1	1	English,	Miner,	Grand Tunnel,

Luzerne and Carbon counties, Pennsylvania, with remarks on the cause of each ending December 31, 1882.

Remarks on Extent of Injury and Cause of Accidents.	Explosion of CH4 gas.	Falling of roof and coal.	Crushed by mine cars.	Explosion of powder and blasts.	Miscellaneous.	On surface.	Totals.	No. of accidents.
Leg broken near ankle by rock falling upon him from under top coal,		1					1	1
Arm broken; attempted to board a running culm car and fell under it,						1	1	2
Hand severely crushed by car running over it while turning a latch,			1				1	3
Leg broken near ankle; jammed between mine locomotive and cars,			1				1	4
Leg fractured near ankle by falling under cars outside on the bank,						1	1	5
Severely cut on head by rock falling upon him while prying it down,		1					1	6
Severe cut upon his back, effected by a piece of top coal falling on him,		1					1	7
Foot severely injured by a fall of rock,		1					1	8
Wrist broken and shoulder bruised by fall of a thin flake of rock,		1					1	9
Back severely bruised by a fall of rock,		1					1	10
Severely injured by being jammed between two culm cars outside,						1	1	11
Slightly burned by an explosion of carbureted hydrogen gas,	1						1	12
One rib fractured by being caught between cars,			1				1	13
Hand and arms severely cut by coal falling while using the bar prying it down,		1					1	14
Face and hands slightly burned by an explosion of gas,	1						1	15
Arm severely bruised by a car jumping off the track and crushing him against the pillar,			1				1	16
Face and hands slightly burned by an explosion of gas,	1						1	17
Face and hands severely burned by an explosion of gas,	1						1	18
Slightly burned by exploding one third keg of powder,				1			1	19
Ankle dislocated and fractured by T-rail springing loose and crushing it against a prop,					1		1	20
Severely injured by a fall of "black rock,"		1					1	21
Severely injured on temple; struck his head against a collar while riding the mule,					1		1	22
Foot severely bruised by being caught between the car and mine-door,			1				1	23
Face and hands slightly burned by explosion of carbureted hydrogen gas,	1						1	24
Face and hands slightly burned by the same explosion of gas,	1						1	25
Shoulder-blade fractured by being struck by an empty car while crossing the track,						1	1	26
Arm dislocated by a prop falling upon him,					1		1	27
Eye severely injured by a piece of steel flying into it from jumper-drill,					1		1	28
Face and hands slightly burned by an explosion of gas,	1						1	29
Hip dislocated and body bruised, { Were working together in gangway		1					1	30
Body severely bruised, { when fall of top coal came upon them		1					1	31
Five ribs broken by piece of coal falling on him from between two slips,		1					1	32
Leg broken by being crushed between a car and the mine-door,			1				1	33
Face and hands burned by an explosion of gas,	1						1	34
Face and hands severely burned by the same explosion of gas,	1						1	35
Severely injured by a piece of coal bursting from the solid upon him,		1					1	36
{ Both men had their faces and hands burned by an explosion of gas. {	1						1	37
{ They were working together when explosion occurred, {	1						1	38
Three ribs broken by falling under cars,			1				1	39
Severe cuts upon his cheek and temple by a fall of coal,		1					1	40
Face and hands burned by an explosion of gas,	1						1	41
Face and hands burned by an explosion of gas,	1						1	42
Back severely injured by coal falling upon him while prying coal down,		1					1	43
Eye destroyed by a blast bursting through the pillar,				1			1	44
Thigh broken by a fall of coal,		1					1	45
Back severely injured by a fall of rock from roof,		1					1	46
Two fingers crushed by cars while attempting to turn latches,			1				1	47
Arm and hand severely cut by a fall of coal,		1					1	48
Face and hands burned by an explosion of gas,	1						1	49
Foot severely crushed under cars; kicked by a mule until he fell under them,			1				1	50
Back severely injured by a fall of coal,		1					1	51
Had hold of mule's tail going up a steep manway, and was kicked in his face,					1		1	52
Leg broken by falling under cars. The cars took the wrong track and struck him,			1				1	53
Arm broken by a fall of rock in tunnel,		1					1	54
Hand crushed by a car running over a block upon it,			1				1	55
Hips injured by being crushed between a car and door post,			1				1	56
Hip dislocated by a fall of top coal,		1					1	57
Back slightly burned by an explosion of gas,	1						1	58
Leg broken by a fall of coal,		1					1	59
Two ribs fractured and otherwise injured by a fall of coal,	1						1	60

TABLE No. 6—

DATE.	Number of accidents.	Names of Persons Injured.	Age.	Wife.	Children.	Nationality	Occupation.	Names of the Collieries.
May 18	61	Theophilus Davies,	45	. .	. .	Welsh, .	Laborer, . .	Reynolds, ...
19	62	Harman Miller, .	19	. .	. .	German, .	Runner, . .	No. 2 Shaft, Nanticoke, .
22	63	Hezekiah Yale, . .	19	. .		American,	Runner, . .	Laurel Run, ...
22	64	James Conniff, . .	26		. .	Irish, . .	Footman, . .	Henry, ...
24	65	Thomas Dullard, .	35	1	.	Irish, .	Miner, . . .	Henry, ...
29	66	Percil Emrick, . .	36	1	6	German, .	Fan runner, .	Franklin, ...
31	67	Robert Morris, . .	53	1	6	American,	Miner, . . .	Wyoming, ...
June 6	68	John Mangan, . .	29	. .	. .	Irish, . .	Laborer, . .	No. 4, Plymouth, . . .
6	69	Charles W. Miller,	23		. .	American,	Miner, . . .	No. 1 Tunnel, Nanticoke,
7	70	Benjamin Lewis, .	13	. .	.	Welsh, . .	Door-boy, . .	Henry, ...
8	71	Anthony Caffrey, .	15		.	Irish, . .	Door-boy, . .	Empire, ...
8	72	John Barton, . . .	32	1	.	Irish, . .	Miner, . . .	Reynolds, ...
13	73	Evan Davies, . . .	21		.	Welsh, . .	Miner, . . .	Mineral Springs, ...
14	74	William Peterson,	26		.	Swede, . .	Miner, . . .	Diamond, ...
15	75	William Benson, .	30	1	.	English, .	Miner, . . .	Mill-Creek Slope, ...
15	76	Michael Lynch, . .	23		.	Irish, . .	Sinker, . . .	Stanton Air-Shaft, . .
15	77	John Welch, . . .	35	1	4	Irish, . .	Sinker, . . .	Stanton Air-Shaft, . . .
16	78	J. J. Montgomery,	30	1		American,	Footman, . .	No. 10, Sugar Notch, . .
16	79	Hugh Sheridan, .	16			American,	Driver, . . .	No. 3 Plymouth, ...
17	80	Frank Rosteski, .	34	1	.	Polish, .	Laborer, . .	East Boston, ...
17	81	John L. Evans, . .	36			Welsh, . .	Miner, . . .	Diamond, ...
17	82	Thos. R. Morgans,	25	1	2	Welsh, . .	Miner, . . .	Diamond, ...
17	83	Mor. D. Williams,	45	1		Welsh, . .	Miner, . . .	Diamond, ...
17	84	John Gallagher, .	28	. .		Irish, . .	Laborer, . .	Diamond, ...
17	85	Neil Gallagher, . .	24			Irish, . .	Laborer, . .	Diamond, ...
17	86	David P. Griffith,	29	1	2	Welsh, . .	Miner, . . .	Diamond, ...
17	87	Wm. J. Williams,	50	1		Welsh, . .	Miner, . . .	Diamond, ...
17	88	A. H. Morgan, . .	24	1		Welsh, . .	Laborer, . .	Diamond, ...
17	89	Robert Lenahan,	30	1		Irish, . .	Laborer, . .	Diamond, ...
19	90	Henry Baur, . . .	22			German, .	Footman, . .	Stanton, ...
20	91	James A. Young, .	45	1	6	American,	Miner, . . .	No. 2 Tunnel, Nanticoke,
21	92	William Downes, .	73	1	5	English, .	Laborer, . .	No. 5, Plymouth, ...
21	93	David Jones, . .	17		.	Welsh, . .	Driver, . . .	Mineral Spring, ...
26	94	Thomas Casson, .	38		.	English, .	Laborer, . .	No. 1 Shaft, Nanticoke, .
26	95	Simon Jones, . . .	17		.	Welsh, . .	Driver, . . .	Prospect, ...
29	96	John Clark, . . .	.	. .	.	English, .	Laborer, . .	Bennett, ...
July 5	97	Michael Kitrick, .	14		.	Irish, . .	Door-boy, . .	Hollenback, ...
10	98	Gomer Jones, . . .	22	1	1	Welsh, . .	Miner, . . .	Nottingham, ...
12	99	William Myers, . .	30			American,	Miner, . .	Empire, ...
14	100	Evan J. Hughes, .	35	1	4	Welsh, . .	Miner, . . .	Franklin, ...
15	101	Philip Kimble, .	53	1	8	German, .	Miner, . . .	Conyngham, ...
15	102	James B. Williams,	31	1	. .	Welsh, . .	Miner, . . .	Laurel Run, ...
17	103	William Barton, .	40	1		Polish, . .	Laborer, . .	Nottingham, ...
23	104	George Johnson, .		1	2	English, .	Miner, . . .	Harry E., ...
27	105	Lewis Harris, . .	35	1	4	Welsh, . .	Miner, . . .	Dodson, ...
27	106	Michael Freighl, .	15	. .		American,	Driver, . . .	Conyngham, ...
28	107	Reuben Washburn,	14	. .	. .	English, .	Driver, . .	East Boston, ...
31	108	John Tague, . . .	17	. .	. .	Irish, . .	Driver, . .	Enterprise, ...
Aug. 1	109	David Davies, .	13	. .	. .	Welsh, . .	Door-boy, . .	Dodson, ...
2	110	Patrick Kane, . .	12	. .	. .	Irish, . .	Slate picker,	No. 2, Red-Ash, ...
3	111	Lawrence McGill,	26		. .	Irish, . .	Laborer, . .	Conyngham, ...
4	112	Edward Wardue, .	38	1	6	German, .	Loader, . . .	Hartford, ...
11	113	Jacob Mangold, .	35	1	. .	German, .	Miner, . . .	No. 10, Sugar Notch, . .
11	114	Anthony Cooney,	30	. .	. .	Irish, . .	Laborer, . .	No. 10, Sugar Notch, . .
14	115	John Dougherty, .	15	. .	. .	American,	Driver, . . .	Exeter, ...
14	116	James Heffron, . .	42	1	7	Irish, . .	Miner, . . .	Gaylord Slope, ...
14	117	Edward Brown, .	24	. .		Irish, . .	Laborer, . .	Gaylord Slope, ...
15	118	John Richard, . .				. . . . .	Loader, . .	Pine Ridge, ...
18	119	William Sutton, .	45	1	4	English, .	Miner, . . .	Enterprise, ...
22	120	John Knapp, . . .	24	. .	. .	American,	Miner, . . .	Exeter, ...
30	121	Jos. Kurhwivski,	22	. .	. .	Polish, . .	Laborer, . .	No. 2 Slope, Nanticoke, .
Sept. 4	122	Thomas Reiley, .	12	. .	.	Irish, . .	Slate picker, .	Franklin, ...
5	123	John Wright, . . .	15		. .	Welsh, . .	Door-boy, . .	Wyoming Shaft, ...
5	124	James Hogan, . .	36	1	. .	Irish, .	Laborer, . .	Wyoming Shaft, ...
6	125	John Leonard, . .	32	1	5	Irish, . .	Miner, . . .	Conyngham, ...
4	126	Evan Hughes, . .	38	1	3	Welsh, . .	Fire-boss, . .	Warrior Run, ...
11	127	Hartman Claure, .	.	. .	. .	. . . . .	Plateman, . .	Hollenback, ...
14	128	Patrick Riley, . .	24	. .	. .	Irish, . .	Runner, . . .	Enterprise, ...
16	129	John Wascoe, . .	35	1	2	German, .	Miner, . . .	No. 2 Shaft, Nanticoke, .

Continued.

Remarks on Extent of Injury and Cause of Accidents.	Explosion of Oil Gas.	Falling of Roof and Coal.	Crushed by mine cars.	Explosion of powder and blasts.	Miscellaneous.	On surface.	Totals.	Number of accidents.
Leg broken by being struck by an empty car,			1				1	61
Hips severely squeezed between a car and door-post,			1				1	62
Severely wounded on his head by falling under cars,			1				1	63
Severely injured by being crushed between a car and prop,			1				1	64
Face and hands burned by an explosion of gas,	1						1	65
Severely injured by falling into the fan while prying it off the center,						1	1	66
Crushed severely between two loaded cars,			1				1	67
Wrist broken by a lump of coal rolling upon him,					1		1	68
Arm broken and otherwise bruised and cut by a fall of coal,		1					1	69
Leg broken by a car striking a board against it,					1		1	70
Ankle dislocated and small bone fractured by a fall of coal,		1					1	71
Hip dislocated by barring coal down, which rolled upon him,		1					1	72
Severely injured by a blast exploding while he was approaching it,				1			1	73
Leg broken and face cut by a fall of coal,		1					1	74
Face and hands slightly burned by an explosion of gas.	1						1	75
Both were severely burned by an explosion of gas while descending the shaft on the bucket,	1						1	76
	1						1	77
Leg broken by being jammed between cars,			1				1	78
Arm cut and collar-bone broken by falling under cars,			1				1	79
Back severely injured by jumping off a runaway car,					1		1	80
All had their faces and hands burned by an explosion of gas while endeavoring to extinguish a burning gas-feeder in the face of one of the airways. The peculiar situation of the fire caused much danger and difficulty to extinguish it, and the mine had to be flooded with water before it was successfully done,								81
								82
								83
								84
								85
	8						8	86
								87
								88
Slightly burned, and cut on thigh by an ax, during explosion of gas,	1						1	89
Two ribs fractured by falling under a car,			1				1	90
Two ribs fractured and cuts on his face by a fall of top slate,		1					1	91
Leg broken by a flying fragment of car-wheel from a runaway car,						1	1	92
Severely kicked on his head by a mule,					1		1	93
Leg fractured and severely cut on his head by a fall of rock,		1					1	94
Severely cut on his leg by being crushed between cars,			1				1	95
Ruptured by over-exertion in pushing a car,						1	1	96
Small bone of leg broken by a car running over it,			1				1	97
Cuts on his head, shoulder, and leg by a fall of slate,		1					1	98
Face and hands burned by an explosion of powder,				1			1	99
Arm broken and ankle injured by a fall of coal,		1					1	100
Back injured by a fall of coal,		1					1	101
Two ribs broken by falling off an air-bridge,					1		1	102
Legs injured by returning prematurely to a blast,				1			1	103
Slightly injured by a fall of rock,		1					1	104
Ankle broken by coal falling on it while he was working out a shot,		1					1	105
Hips severely injured by being squeezed between cars,			1				1	106
Two ribs broken by a kick from a mule,					1		1	107
Several teeth kicked out by a mule while putting on the stretcher,					1		1	108
Leg severely lacerated by a car running over him,			1				1	109
Arm broken by falling in the breaker building,						1	1	110
Severely injured by being crushed between car and side of gangway,			1				1	111
Arm severely crushed by being caught between cars,						1	1	112
Faces and hands burned by an explosion of gas; the explosion occurred while brushing the gas out,	1						1	113
	1						1	114
Small bone of leg broken near the ankle by being caught between car and prop,			1				1	115
Both legs broken by a fall of a thin flake of bone coal,		1					1	116
Body bruised by the same fall of coal,		1					1	117
Arm crushed between jammers of railroad cars,						1	1	118
Hand crushed by a falling rock striking it while it was on the drill,		1					1	119
Face, arms, and back severely burned by an explosion of gas,	1						1	120
Foot cut off by a fall of rock,		1					1	121
Leg broken by playing with a truck during noon hour,						1	1	122
Severely burned by an explosion of gas,	1						1	123
Face and hands burned in the same explosion,	1						1	124
Face and hands burned by an explosion of gas,	1						1	125
Face and hands burned by an explosion of gas,	1						1	126
Foot caught in the rolls; no bones broken,						1	1	127
Severely cut on head by a lever slipping while putting a car on track,					1		1	128
Leg broken by a fall of coal from pillar,		1					1	129

TABLE No. 6.—

DATE.	No. of accidents.	Names of Persons Injured.	Age.	Wife.	Children.	Nationality	Occupation.	Names of the Collieries.
Sept. 18	130	John Palmer,		1		English,	Miner,	Harry E. Colliery,
18	131	William Roberts,	35			Welsh,	Miner,	Warrior Run,
23	132	John Benson,	55	1	11	Irish,	Miner,	Conyngham,
25	133	Henry Barnes,	27	1	2	English,	Runner,	Dodson Shaft,
25	134	William Phillips,	45	1		Welsh,	Miner,	Boston Mines,
28	135	Watkin Harris,	38	1		Welsh,	Miner,	Diamond,
30	136	Owen Malley,	32	1		Irish,	Miner,	Enterprise,
Oct. 2	137	Martin Kearney,	34			Irish,	Laborer,	Diamond,
2	138	John J. Griffith,	40	1	5	Welsh,	Sinker,	No. 2, Kingston,
9	139	John Klinetop,	14			Irish,	Helper,	Nottingham,
9	140	William Williams,	34			Welsh,	Miner,	Enterprise,
14	141	James Badfield,				Welsh,	Miner,	Laurel Run,
16	142	James Brady,	40	1		Irish,	Miner,	Wanamie,
17	143	Frank Cosgrove,	40	1	5	Irish,	Laborer,	Empire,
19	144	Adam Keile,	16			German,	Slate-picker,	Diamond Breaker,
20	145	Edward Mangan,	36	1	5	Irish,	Miner,	Conyngham,
23	146	Michael O'Leary,	19			Irish,	Footman,	Forty Fort,
27	147	Michael Duffey,	34	1		Irish,	Track-layer,	Harry E. Colliery,
27	148	Philip Coyle,	14			American,	Door-boy,	Baltimore Slope,
21	149	John McMasters,	48	1		Irish,	Miner,	West End Colliery,
31	150	John Jones,	15			Welsh,	Door-boy,	Dodson,
31	151	Anthony Lenahan,	39	1	3	Irish,	Miner,	No. 9, Sugar Notch,
Nov. 6	152	Thomas O'Harah,	18			American,	Oiler,	No. 9, S. G. Breaker,
8	153	Charles Shaulsh,	28			Swede,	Miner,	Oak Wood, Prospect,
8	154	Patrick McCarty,				Irish,		Chauncey,
9	155	Thomas O'Brien,	17			American,	Runner,	Exeter,
10	156	Patriek Malia,	40	1	5	Irish,	Miner,	Diamond,
11	157	Thomas McGuire,	32	1	3	Irish,	Miner,	Nottingham,
11	158	Thomas Brennen,	43	1	3	Irish,	Miner,	No. 5, Plymouth,
17	159	Thomas Morris,	15			Welsh,	Driver,	Grand Tunnel,
20	160	William Rush,	42	1	3	German,	Headman,	Prospect,
21	161	Charles Evans,	19			Welsh,	Laborer,	No. 2, Red Ash,
22	162	Wm. A. Thompson,		1		American,	Foreman,	Stock Coal Trest. S. C. Co.,
23	163	John Paridoski,	36	1	4	Polish,	Miner,	Mill Creek Slope,
24	164	David J. Powell,	13			Welsh,	Driver,	No. 2, Red Ash,
25	165	John Singhouse,	40	1	5	German,	Carpenter,	Baltimore Slope,
25	166	John Bueyson,	30	1		Swede,	Laborer,	No. 2, Kingston,
27	167	Solomon Jermyn,	40	1	1	Welsh,	Miner,	Exeter,
28	168	John Mank,	16			English,	Driver,	No. 4, Plymouth,
28	169	John Kayne,	30	1	2	Polish,	Miner,	Dodson Shaft,
Dec. 2	170	Joseph Adam,		1	6	English,	Miner,	Exeter,
2	171	John Corcoran,	30	1	2	Irish,	Miner,	Enterprise,
5	172	John Gallagher,				American,	Driver,	Baltimore Slope,
5	173	John Cullen,	40	1	4	Irish,	Miner,	Conyngham,
6	174	Patrick McKeever,	42			Irish,	Miner,	East Boston,
8	175	John Matthews,	55	1		Welsh,	Miner,	Harry E. Colliery,
12	176	Chas. W. Phillips,	40			Welsh,	Miner,	No. 2, Kingston,
13	177	Charles Horton,	65		2	American,	Laborer,	Mineral Springs,
15	178	Frank Morrin,	29	1		Polish,	Miner,	No. 2, Kingston,
16	179	William S. Jones,		1	1	Welsh,	Laborer,	No. 1, Kingston,
21	180	Dennis Buckley,				American,	Driver,	Chauncey,
22	181	Wm. M. Thomas,	44	1	4	Welsh,	Mine-boss,	Stanton,
22	182	David A. Jones,	45	1		Welsh,	Carpenter,	Stanton,
22	183	John Malloy,	44	1	6	Irish,	Miner,	Stanton,
25	184	Pete McLaughlin,	40	1	2	Irish,	Laborer,	Midvale,
29	185	David Walters,	21	1		Welsh,	Laborer,	Gaylord,
		Totals,		94	231			

Continued.

Remarks on Extent of Injury and Cause of Accidents.	Explosion of CH4 gas.	Falling of roof and coal.	Falling down shafts.	Crushed by mine cars.	Explosion of powder and blasts.	Miscellaneous.	On surface.	Totals.	No. of accident.
Leg broken by car jumping track and crushing him against pillar,				1				1	130
Leg broken and foot crushed by a fall of coal,		1						1	131
Back and side bruised by a fall of coal,		1						1	132
Face and hands burned by an explosion of gas,	1							1	133
Severely squeezed by a fall of soapstone,		1						1	134
Hands and ears burned by an explosion of gas,	1							1	135
Face and hands burned by an explosion of gas,	1							1	136
Hips slightly squeezed between a car and prop,				1				1	137
Severely injured by blast exploding while he was trying to take the tamping out,						1		1	138
Arm broken by a kick from a mule,						1		1	139
Hands and arms slightly burned by an explosion of gas,	1							1	140
Shoulder bone broken by a fall of top coal,		1						1	141
Collar bone broken and cut on the head by a fall of coal,		1						1	142
Was injured quite severely by a fall of coal,		1						1	143
Arm broken and feet severely injured by being caught around a revolving shaft,							1	1	144
Face and hands burned; charge of powder exploding in his hands,					1			1	145
Leg broken by being caught under the cage,						1		1	146
Severely injured by being caught between the cage and roof,						1		1	147
Small bone of arm broken by being struck with a car,				1				1	148
Head injured by a fall of coal,		1						1	149
Leg broken by falling under cars,				1				1	150
Face and hands burned by an explosion of gas,	1							1	151
Leg broken by falling down a row of steps in the breaker,							1	1	152
Face and back of hands burned by an explosion of gas,	1							1	153
Arm and leg bruised by coal flying from a blast,					1			1	154
Hand cut and bruised by car while in the act of removing a block,				1				1	155
Eye destroyed by a blast bursting through the pillar from the adjoining chamber,					1			1	156
Severely cut on back by a piece of top coal falling upon him,		1						1	157
Face bruised and cut by a premature blast,					1			1	158
Leg caught between cars; flesh severely bruised, no bones broken,				1				1	159
Left arm severely bruised; caught between empty and loaded cars,				1				1	160
Leg broken above knee by being jammed between mine cars,				1				1	161
Fell off trestling and broke his thigh,							1	1	162
Face, hands, and neck burned by an explosion of gas,	1							1	163
Arm broken by being thrown off a mule's back,							1	1	164
Both legs crushed by a train of cars running over them while he was fixing a head-block at the top of the slope; both feet had to be amputated,				1				1	165
Badly bruised by being crushed between mine cars,				1				1	166
Arm severely cut by coal flying from a shot in adjoining chamber,					1			1	167
Arm broken by falling off a car and dragged along several feet,				1				1	168
Slightly burned by an explosion of gas,	1							1	169
Face and arms slightly burned by an explosion of gas,	1							1	170
Face and hands burned by an explosion of a small quantity of gas,	1							1	171
Right leg broken by falling under an empty car,				1				1	172
Face and hands burned; charge of powder exploding in his hands,					1			1	173
Two ribs broken and otherwise injured by a piece of rock falling on him,		1						1	174
Arm and shoulder bruised by a fall of rock,		1						1	175
A board fell down the shaft while he was at the bottom, and he jumped into a deep ditch to get out of its way, and broke his leg and dislocated his ankle,						1		1	176
Seriously injured by being jammed between two empty culm cars,							1	1	177
Severely injured by a fall of top coal in Red Ash vein,		1						1	178
Ankle crushed and had to be amputated, by pushing a car into the shaft in a mistake, and falling down with it to the bottom, a distance of fifty-eight feet,			1					1	179
Left shoulder dislocated by being caught between two cars,				1				1	180
Face and hands slightly burned by an explosion of gas.	1							1	181
Hand severely and face slightly burned by an explosion of gas,	1							1	182
Face and hands burned by the same explosion,	1							1	183
Left arm broken and face cut by coal flying from blast,					1			1	184
Cut about two inches long on thigh by a fall of bone coal,		1						1	185
Totals,	49	49	1	39	12	18	17	185	

TABLE No. 7.—*Showing number of days worked by the breakers, average tons of coal mined per day, number of persons employed, tons of coal mined per employee, persons injured, persons killed, tons of coal mined per persons injured and killed, tons of coal mined per life lost, ratio of employees to the persons injured and killed, total tons of coal mined, kegs of powder used, and mules and horses employed during 1882.*

LEHIGH VALLEY COAL COMPANY.

NAMES OF THE COLLIERIES.	Number of days worked by breaker.	Average tons of coal mined per day.	Number of persons employed.	Tons of coal mined per employee.	Number of persons injured.	Number of persons killed.	Tons of coal mined per persons injured and killed.	Tons of coal mined per life lost.	Ratio of employees to each person injured and killed.	Total tons of coal mined during 1882.	Number of kegs of powder used for all purposes in the mines.	Number of mules and horses employed.
Exeter Shaft,	171.05	652.4	323	345.20	6	3	12,388.88	37,166.66	35.88	111,500.00	3,565	55
Prospect,	229.55	974.2	480	465.90	7	2	24,848.11	111,816.5	53.33	223,633.00	7,329	60
Mineral Spring,	204.55	393.3	193	416.92	4	. . .	20,116 76	. .	48.25	80,467.07	2,485	23
Henry Shaft,	220.50	559.6	271	455.39	3	2	24 682.2	61,705.5	54.20	123,411.00	3 601	46
Mldvale,	200.45	260.6	171	305.59	1	1	26,128.00	52,256.00	85.50	52,256.00	1,813	8
	*205.22	2,881.1	1,438	411.17	21	8	20,388.5	73,908.38	49.58	591,267.07	18,793	192

LEHIGH AND WILKES-BARRE COAL COMPANY.

Hollenback,	213.12	1,069.4	468	487.02	5	1	37,988.17	227 929.04	78.60	227.929.04	4 905	35
Diamond,	207.70	484 5	255	394.68	19	2	4 745.00	50,322.53	12.14	100,645.06	2,817	33
Empire,	221.75	1,269.3	696	385.31	8	1	29.797.56	268,178.04	77.33	268,178.11	7,036	47
Hartford,	231.00	938.3	609	355.93	4	2	36,127.00	108,381 02	101.50	216,762 04	6,969	55
Sugar Notch Shaft,	211.55	770.3	527	309.25	3	. . .	54,325.35	. .	175.66	162,976.06	6,004	60
Sugar Notch Slope,	134.25	654 0	449	195.55	6	2	10,975.25	43 901.01	75.00	87,802.03	3,341	40
Nottingham,	218.05	1,535.9	791	423.41	7	4	30,447.36	83,730.27	71.90	334,921.10	8,480	76
Reynolds,	232.50	689.2	355	451.40	2	. . .	81,124.54	. .	225.70	160 249.08	3,912	54
Wanamie,	197.25	677.6	442	302.39	1	1	66,830.25	133,660.50	221.00	133,660.50	5,093	48
Stanton,	Breaker not working.		97	. . .	4	. . .	. . . .	. . .	24.25	. . . .	275	4
	*207.46	8,161.2	4,689	361.08	59	13	23,515.59	139,240.23	65.12	1,693,127.02	48,832	452

DELAWARE AND HUDSON CANAL COMPANY.

Mill Creek,	244.00	706.3	342	503.94	3	3	28.725.11	57,450 23	57 00	172,350.14	....	55
Pine Ridge,	247.00	511.8	312	405 20	1	2	42,140.86	63,211.09	104.00	126,422.18	....	52
Laurel Run,	248.25	566.7	273	515.45	7	1	17,589.75	140 718.03	34.12	140,718 06	.....	44
Baltimore Slope,	242.25	408.8	235	421.41	3	..	33 014.00	..	78.33	69,042.02	....	25
Baltimore Tunnel,	193.75	412 5	278	287.55	..	1	79.940.02	79.940.02	278.00	79,940.05	.....	33
Conyngham,	249.25	436 8	242	449.94	9	3	9,073.83	36 295.33	20.16	108 886.00	....	27
No. 2, Plymouth,	243.75	875.6	361	591.25	.	..	..	..	..	213 444 04	.....	38
No. 3, Plymouth,	231.75	684.6	354	448.21	2	1	52,889.67	158 669.03	100.66	158,669.06	....	40
No. 4, Plymouth,	232.50	487 4	302	375 30	3	3	18,890.33	37.780.66	50.33	113 342 00	.....	24
No. 5, Plymouth,	241.00	785.8	366	517.44	4	2	31,564.33	94,693.00	61.00	189,386 00	....	52
	237.35	5,907.7	3,065	457.48	32	16	29,212.52	87,637.57	63.85	1,402,201.08	....	390

SUSQUEHANNA COAL COMPANY.

Breaker No. 1,	278.25	557.6	578	268.64		....	.....	.....	.	155,276.15		44
Breaker No. 2,	264.50	1,246.1	962	342.63	14	10	32,796.04	78,710.51	92.62	329 616.10	22,830	111
Breaker No. 5,	284.00	1 064 1	683	442.47		...				362 212.90	...	81
Grand Tunnel, No. 3,	253.20	462.3	297	394.16	2	1	39,022.23	117,066.70	99.00	117.066.70	..	28
	269.98	3,348.6	2 520	358.79	16	11	33,487.84	82 197.44	93.33	904,171.85	22,830	264

WYOMING VALLEY COAL COMPANY.

Wyoming Shaft,	242 70	917.3	471	472 70	3	1	55,661.50	222,646.00	117.75	222,646.00	5.900	46
Forty Fort,	231.00	521.5	358	336 55	2	...	60,238.50	.....	179.00	120,477.00	4,400	42
Harry E,	213 00	255 9	230	237.07	5	..	10 905.40	....	46.00	54 527.00	..	17
	228.90	1,741.5	1,059	375.49	10	1	36,150 00	397,650.00	96.27	397,650.00	10,300	105

MISCELLANEOUS COAL COMPANIES.

Avondale,	221.70	844 0	376	497.65	.	1	187,119.17	187,119.17	376.00	187 119.17	.....	54
Boston,	232.00	406.6	164	575 25	1	..	94,341.15	...	164.00	94 341.15	...	29
No. 1 Shaft, Kingston,	266.00	688.3	268	683.22	4	1	36,620.62	183,103.10	53.60	183,103.10	4 253	36
No. 2 Shaft, Kingston,	255.75	977.9	389	642 94	5	...	50,021.22	.	77.08	250,106.12	6 786	43
Gaylord,	228.75	737.9	352	479.55	3	1	42.201.02	168,804.08	88.00	168,804.08	5,225	55
Warrior Run,	153.00	338.6	214	242.10	2	2	12,952.75	25,905.50	53.05	51,811 00	....	17
Franklin,	211.25	758.8	444	361.04	4	...	40,076 32		111.00	160.305.29	3,387¼	26
Enterprise,	222.60	653 4	325	447.55	7	1	18.182.01	145,456.12	40.62	145,456.12	4 651	45
East Boston,	205.45	559.7	278	413.66	3	...	5,000.00	.....	92.66	115,000.00	.	28
Black Diamond,	224.25	369.8	347	239.03	1	.	82,946.00	.....	347.00	82.946.00	3,400	32
Maltby,	96.00	318.2	213	143.43	..	...	.....	.....	.....	30,551.66	....	34

TABLE No. 7—*Continued.*

MISCELLANEOUS COAL COMPANIES—*Continued.*

NAMES OF THE COLLIERIES.	Number of days worked by breaker.	Average tons of coal mined per day.	Number of persons employed.	Tons of coal mined per employee.	Number of persons injured.	Number of persons killed.	Tons of coal mined per person injured and killed.	Tons of coal mined per life lost.	Ratio of employees to each person injured and killed.	Total tons of coal mined during 1882.	Number of kegs of powder used for all purposes in the mines.	Number of mules and horses employed.
No. 1, Red Ash,	232.50	419.1	216	451.17	. . .	2	48 727 02	48,727.02	108 00	97,454.05	4 269	16
No. 2, Red Ash,	195.50	353.9	238	290.77	3	. . .	23,068.03		79 33	69,204.11	3,581	16
Raubville,	216.00	296.7	188	340 95	. .	1	64.100.00	64 100.00	188.00	64 100.00	2,200	15
Bennett Shaft,	186.00	141.0	186	141.00	1	. . .	26 226.17		186 00	26,226.17	1 027	7
Dodson,	210.00	578 4	252	482.05	6	4	12.147.71	30,369.29	25.20	121,477.17	2 764	36
Salem,	250.00	189.8	180	263.61	.	1	47.450.00	47,450.00	180.00	47.450.00	1,440	24
West End Coal Company,	283.25	313.1	241	368 09	1	.	88 711.05		241.00	88 711.05	2 400	23
Hillman,	251.00	199.2	130	384.61	.	1	50.000.00	50,000.00	130.00	50 000.00	2,062	9
Chauncey,	239.00	98.7	64	368.64	3	. . . .	7,864.33	. . . .	21.33	23,593.00	840	10
Hollenback, R. S. Poole,	230.00	57.3	45	292.93	. . . .	. .	. . .	. . . .	. . . .	13,182 00	236	4
	219.52	9,433 9	5,110	405.27	44	15	35,100.69	138,062.74	86.61	2,070,941.18	48,521¼	559

RECAPITULATION.

Lehigh Valley Coal Company,	205.22	2,881.1	1,438	411.17	21	8	20,388.5	73,908.38	49.58	591 267.07	18,793	192
Lehigh and Wilkes-Barre Coal Company,	207.46	8,161.2	4 689	361.08	59	13	23,515.59	130 240.23	65.12	1,693,127.03	48 832	452
Delaware and Hudson Canal Company,	237.35	5 907.7	3 065	457.48	32	16	29.212.52	87,637.57	63.85	1 402.201 15		390
Susquehanna Coal Company,	269.98	3.348.6	2,520	358.79	16	11	33.487 84	82,197.44	93 33	904,171.85	22,830	264
Wyoming Valley Coal Company,	228.90	1,741 5	1 059	375.49	10	1	36,150.00	397,650.00	96.27	397 650.00	10.300	105
All Miscellaneous Coal Companies,	219.52	9,433.9	5,112	405.27	44	15	35,100.69	138,062.74	86.61	2,070,941.18	48,521¼	559
	*228.07	30,952.5	17,883	394.79	182	64	28,696.57	141,552.47	72.68	7,059,358.28	149,276¼	1,962

* Average.

In addition to the above, three persons were seriously injured and nine killed in new shafts in progress of sinking, adding which would give a total of one hundred and eighty-five injured and seventy-three killed, reducing the production of coal per life lost to 96,703.53 tons. These shafts were not completed and were not producing coal, therefore they are not included in the above table.

TABLE No. 8.—*The number of each class of employés at each colliery during the year 1882.*

LEHIGH VALLEY COAL COMPANY.

NAMES OF THE COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							GRAND TOTALS INSIDE AND OUTSIDE.
	Bosses.	Miners.	Laborers.	All company men.	Drivers and runners.	Door-boys.	Totals inside.	Bosses.	Mechanics.	Head and plate-men.	All company men.	Drivers and runners.	Slate-pickers.	Totals outside.	
Exeter Shaft,	2	84	39	28	44	16	213	2	12	8	38	12	38	110	323
Prospect,	2	96	96	51	61	24	330	1	20	7	41	8	73	150	480
Mineral Springs,	1	54	26	12	23	7	123	1	10	9	15	5	30	70	193
Henry,	1	69	30	23	66	18	207	1	4	5	30	1	23	64	271
Midvale,	1	32	32	11	15	7	98	1	10	2	13	2	45	73	171
	7	335	217	125	215	72	971	6	56	31	137	28	209	467	1,438

LEHIGH AND WILKES-BARRE COAL COMPANY.

Diamond,	1	40	35	27	32	17	152	1	16	7	15	5	59	103	255
Hollenback,	1	102	115	44	31	35	328	1	3	19	48	4	65	140	468
Empire,	1	168	145	75	62	41	492	1		21	50	5	127	204	696
Hartford,	1	125	125	54	44	39	388	1	8	12	59	6	135	221	609
Stanton,	1	25	25	11	3	3	68	1	7		20	1		29	97
Sugar Notch Shaft,	1	136	124	45	46	34	386	1	8	18	27	10	77	141	527
Sugar Notch Slope,	1	130	120	25	40	28	344	1	8	8	30	8	50	105	449
Nottingham,	1	220	100	104	60	36	521	1	7	30	52		180	270	791
Reynolds,	1	95	70	27	40	20	253	1	3	10	17	6	65	102	355
Wanamie,	1	130	90	25	43	26	315	1	5	16	25	4	76	127	442
	10	1,171	949	437	401	279	3,247	10	65	141	343	49	834	1,442	4,689

DELAWARE AND HUDSON CANAL COMPANY.

Mill Creek,	1	75	55	29	64	6	230	1	8	8	35	5	55	112	342
Pine Ridge,	1	60	30	39	59	14	194	1	6	9	34	3	65	118	312
Laurel Run,	1	55	49	20	31	8	164	1	6	10	26	4	62	109	273

TABLE No. 8.—*Continued.*

DELAWARE AND HUDSON CANAL COMPANY—*Continued.*

NAMES OF THE COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals inside and outside.
	Bosses.	Miners.	Laborers.	All company men.	Drivers and runners.	Door boys.	Totals inside.	Bosses.	Mechanics.	Head and plate men.	All company men.	Drivers and runners.	Slate pickers.	Totals outside.	
Baltimore slope,	1	35	25	32	12	9	124	1	6	7	29	7	61	111	235
Baltimore Tunnel,	1	54	50	25	20	5	155	1	12	6	26	3	75	123	278
Conyngham,	1	38	34	40	19	20	142	1	4	7	23	2	63	100	242
No. 2, Plymouth,	1	90	54	38	43	11	237	1	. .	5	32	2	84	124	361
No. 3, Plymouth,	1	95	50	42	39	16	243	1	5	4	19	3	79	111	354
No. 4, Plymouth,	1	96	28	32	30	15	202	1	6	8	30	3	52	100	302
No. 5, Plymouth,	2	98	47	49	48	22	266	1	. . . .	10	38	3	48	100	366
	11	696	422	346	366	116	1,957	10	53	74	292	35	644	1,108	3 065
SUSQUEHANNA COAL COMPANY.															
Breaker, No. 1,	1	65	130	40	31	10	277	2	50	16	154	11	68	301	578
Breaker, No. 2,	4	230	250	73	112	43	712	3	8	17	73	11	138	250	962
Breaker, No. 5,	2	141	189	32	75	32	471	1	23	11	57	5	115	212	683
Grand Tunnel, No. 3,	1	46	42	22	20	7	138	1	16	6	26	3	107	159	297
	8	482	611	167	238	92	1,598	7	97	50	310	30	428	922	2,520
WYOMING VALLEY COAL COMPANY.															
Wyoming Shaft,	2	102	84	50	68	29	335	1	11	9	28	7	80	136	471
Forty Fort,	1	101	75	17	37	13	244	1	11	6	35	6	55	114	358
Harry E.,	1	65	32	13	13	6	130	1	9	6	30	4	50	100	230
	4	268	191	80	118	48	709	3	31	21	93	17	185	350	1,059

MISCELLANEOUS COAL COMPANIES.

Avondale,	1	94	98	17	39	7	256	1	10	7	14	8	80	120	376
Boston,	1	31	31	7	19	3	92	1	8	6	19	6	32	72	164
No. 1 Shaft, Kingston,	2	60	60	15	26	12	175	2	1	2	33	2	53	93	268
Nos. 2 and 3 Shafts, Kingston,	2	100	80	13	30	15	240	3	13	14	28	1	90	149	389
Gaylord,	1	96	50	36	37	15	235	1	14	8	14	5	75	117	352
Warrior Run,	1	83	37	7	11	10	149	1	4	5	8	4	45	67	216
Franklin,	3	80	77	27	24	31	242	1	10	17	64	6	104	202	444
Enterprise,	2	70	66	46	40	21	245	2	7	6	20	6	39	80	325
East Boston,	1	75	55	14	32	12	196	1	3	8	20	5	45	82	278
Black Diamond,	3	91	54	25	55	8	236	2	6	9	32	6	56	111	347
Maltby,	2	37	60	10	10	10	129	1	5	8	18	2	50	81	213
No. 1 Red Ash Coal Company,	1	65	41	10	19	7	143	1	3	9	20	4	36	73	216
No. 2 Red Ash Coal Company,	1	75	69	7	19	12	174	1	3	10	18	3	29	64	238
Raubville,	2	40	20	10	13	2	87	1	6	8	40	6	40	101	188
Bennett Shaft,	1	44	46	15	9	3	118	1	5	5	16	1	40	68	186
Dodson,	1	50	50	31	15	8	155	1	6	9	39	2	40	97	252
Salem,	2	46	36	8	12	2	106	1	2	4	15	7	45	74	180
West End Coal Company,	1	75	70	10	13	3	172	1	4	6	16	2	40	69	241
Hillman,	1	38	40	5	10	4	98	1	2	2	13	4	10	32	130
Channcey,	1	16	11	3	8	2	41	1	3	1	4	1	13	23	64
Hollenback, R. S. Poole,	1	10	10	1	6	..	28	1	1	4	2	3	6	17	45
	31	1,276	1,052	317	454	187	3,317	26	116	148	453	84	968	1,795	5,112

RECAPITULATION.

Lehigh Valley Coal Company,	7	335	217	125	215	72	971	6	56	31	137	28	209	467	1,433
Lehigh and Wilkes-Barre Coal Company,	10	1,171	949	437	401	279	3,247	10	65	141	343	49	834	1,442	4,689
Delaware and Hudson Canal Company,	11	696	422	346	366	116	1,957	10	53	74	292	35	644	1,108	3,065
Susquehanna Coal Company,	8	482	611	167	238	92	1,598	7	97	50	310	30	428	922	2,520
Wyoming Valley Coal Company,	4	268	191	80	113	48	709	3	31	21	93	17	185	350	1,059
Miscellaneous Coal Companies,	31	1,276	1,052	317	454	187	3,317	26	116	148	453	84	968	1,795	5,112
	71	4,228	3,442	1,472	1,792	794	11,796	62	418	465	1,628	243	3,268	6,084	17,883

In addition to the above, there were 456 persons employed in and around new shafts in course of sinking, adding which to the above would show that a total of 18,339 persons are employed altogether in the district.

TABLE No. 9.—*Showing number of days worked by each breaker at every colliery, and for each month during 1882.*

LEHIGH VALLEY COAL COMPANY.

NAMES OF THE COLLIERIES.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Exeter,	13.90	11.70	15.45	1.60	. . . .	14.55	21.95	17.10	10,35	21.90	22.40	20.15	171.05
Prospect,	14.90	13.55	17.10	18.30	17.55	19.95	20 05	23.20	19.30	23.00	23.40	19.25	229.55
Mineral Spring,	13.60	13.45	16.65	16.35	16.20	20.25	16.05	19.00	20.00	16.35	19.75	16.90	204.55
Henry,	15.35	14.10	17.90	17.75	17.20	20.20	19.95	20.40	18.20	20.20	22.25	17.00	220.50
Midvale,	14.50	12.10	15.70	15.65	15.70	18.50	16.60	18.00	15.35	20.65	20.80	16.90	200.45

LEHIGH AND WILKES-BARRE COAL COMPANY.

Diamond,	6.50	12.00	13.70	14.50	16.45	10.10	19.00	26.00	20.50	25.10	22.50	21.35	207.70
Hollenback,	14.40	11.40	14.75	15.70	15.80	17.70	21.30	18.72	20.50	24.75	21.50	16.60	213.12
Empire,	16.70	13.30	17.25	17.55	15.90	21.70	23.25	13.25	19.75	25.25	20.95	16.90	221.75
Hartford,	16.00	13.50	17.00	16.50	17.25	21.00	23.00	25.25	20.25	23.25	20.25	17.75	231.00
Sugar Notch Shaft,	15.40	12.50	15.20	15.85	16.65	19.40	19.60	23.20	19.75	22.50	13.85	17.65	211.55
Sugar Notch Slope,	16.75	13.40	16.00	14.80	15.45	17.50	17.75	20.20	2.40	. . . .	. . . .	. . . .	134.25
Nottingham,	16.25	11.80	15.60	18.10	17.50	20.30	20.10	21.60	18.50	20.10	20.50	17.70	218.05
Reynolds,	16.50	11.40	18.00	18.10	17.80	22.70	22.00	23.70	19.50	24.25	21.10	17.45	232.50
Wanamie,	13.75	7.20	13.50	15.55	15.25	18.80	20.05	21.35	17.75	19.65	18.70	15.70	197.25

DELAWARE AND HUDSON CANAL COMPANY.

Mill Creek,	16.75	13.50	17.75	18.75	18.00	22.75	20.25	24.50	20.25	24.50	25.25	21.75	244.00
Pine Ridge,	17.00	15.00	16.50	18.50	18.00	22.75	24.00	25.50	20.75	23.50	23.75	21.75	247.00
Laurel Run,	16.75	14.75	16.25	19.00	18.00	22.75	24.50	25.50	20.25	25.75	22.75	22.00	248.25
Baltimore Slope,	16.00	14.75	18.00	19.00	17.75	22.00	25.00	24.25	20.25	23.25	21.50	20.50	242.25
Baltimore Tunnel,	16.00	15.00	16.00	18.50	17.00	21.75	. . . .	. . . .	21.00	25.00	22.50	21.00	193.75
Conyngham,	17.00	14.50	17.50	19.00	18.00	21.50	24.25	26.00	19.75	25.75	24.50	21.50	249.25
No. 2, Plymouth,	16.75	13.00	16.50	18.50	17.25	22.50	23.00	24.75	20.00	25.50	24.50	21.50	243.75
No. 3, Plymouth,	16.00	11.25	15.25	18.50	17.75	22.75	23.50	24.50	20.50	22.25	23.25	16.25	231.75
No. 4, Plymouth,	15.25	13.25	16.75	18.25	17.00	21.00	21.50	23.25	19.50	23.00	22.75	21.00	232.50
No. 5, Plymouth,	15.25	14.00	18.00	17.25	17.25	21.50	22.50	24.00	20.50	25.25	24.50	21.00	241.00

SUSQUEHANNA COAL COMPANY.

Breaker, No. 1,	22.25	22.50	24.50	22.25	24.00	24.75	24.50	25.50	25.50	24.75	21.50	16.25	278.25
Breaker, No. 2,	16.50	10.75	20.00	23.75	24.50	26.00	23.25	26.50	25.50	25.50	23.00	19.25	264.50
Breaker, No. 5,	22.00	19.50	20.00	24.50	25.00	26.00	24.50	26.75	26.00	25.75	23.50	20.50	284.00
Grand tunnel, No. 3,	21.10	15.60	18.20	21.80	22.90	22.80	21.50	24.20	23.10	22.80	20.60	18.60	253.20

WYOMING VALLEY COAL COMPANY.

Wyoming Shaft,	17.60	12.90	18.00	18.00	17.60	22.70	22.80	24.30	19.10	24.00	23.00	22.60	242.70
Forty Fort,	17.40	11.30	17.90	14.80	16.00	19.30	21.30	22.90	20.10	24.80	23.10	22.10	231.00
Harry E.,	18.50	13.50	17.50	17.00	14.25	16.75	21.25	20.00	16.00	19.25	19.50	19.50	213.00

MISCELLANEOUS COAL COMPANIES.

Avondale,	17.10	12.00	17.70	8.50	11.00	17.00	24.00	25.50	21.00	24.50	22.00	21.40	221.70
Boston,	17.40	13.80	17.40	14.50	17.50	22.20	22.00	24.00	21.00	21.00	19.70	21.50	232.00
No. 1 Shaft, Kingston,	14.90	20.80	21.00	20.60	24.00	24.80	22.80	25.30	23.60	23.90	22.50	21.80	266.00
Nos. 1 and 2 Shafts, Kingston,	18.50	16.50	21.25	16.25	22.50	23.35	24.00	23.50	23.00	24.00	21.50	21.50	255.75
Gaylord,	19.50	15.75	18.00	14.50	19.00	20.50	19.25	22.25	18.50	22.25	20.75	18.50	228.75
Warrior Run,				6.00	13.00	16.00	19.00	20.00	21.00	19.00	19.00	20.00	153.00
Franklin,	14.50	13.00	16.75	18.00	18.00	19.75	16.50	17.75	16.50	20.75	21.50	18.25	211.25
Enterprise,	15.20	13.50	16.50	17.90	15.60	19.90	18.10	21.80	19.70	20.30	23.40	20.70	222.60
East Boston,	17.80	13.90	16.90	14.80	16.00	16.40	20.00	22.50		23.70	22.25	21.20	205.45
No. 1, Red Ash Coal Colliery,	16.50	14.50	17.00	18.00	18.00	20.50	22.25	25.25	19.50	22.50	19.50	19.00	232.50
No. 2, Red Ash Coal Colliery,		2.00	16.25	16.75	15.00	21.50	23.25	23.50	17.50	20.50	20.50	18.75	195.50
Raubville,	16.00	10.00	15.00	15.00	16.00	21.00	19.00	23.00	19.00	22.00	21.00	19.00	216.00
Bennett Shaft,					21.00	25.00	27.00	26.00	21.00	24.00	22.00	20.00	186.00
Dodson,	18.35	13.90	17.40	16.90	18.30	21.90	23.25	23.40	14.50	10.20	14.55	17.35	210.00
Salem,	20.00	17.00	17.00	19.00	23.00	24.00	20.00	22.00	22.00	23.00	24.00	19.00	250.00
West End Coal Company,	24.75	20.75	23.70	21.00	23.50	24.50	23.35	26.50	22 75	24.75	22.95	24.75	283.25
Hillman,	18.00	16.00	19.00	19.00	21.00	22.00	21.00	24.00	21.00	24.00	24.00	22.00	251.00
Chauncy,	18.00	14.00	17.00	18.00	18.00	23.00	21.00	22.00	21.00	23.00	21.00	23.00	239.00
Hollenback, R. S. Poole,	18.00	18.00	19.00	18.00	17.00	19.00	20.00	20.00	18.00	21.60	23.00	19.00	230.00
Maltby,	18.00	14.00	18.00	19.00	18.00	9.00							96.00
Black Diamond,	16.95	12.65	16.10	14.90	14.70	21.65	19.40	22.65	18.05	21.65	22.40	23.15	224.25

TABLE No. 10.—*Showing number and horse-power of each class of engines and number of steam boilers in use at each colliery during 1882.*

LEHIGH VALLEY COAL COMPANY.

NAME OF THE COLLIERIES.	Number of hoisting engines.	Horse-power.	Number of breaker engines.	Horse-power.	Number of pumping engines.	Horse-power.	Number of fan engines.	Horse-power.	Number of donkey pumps.	Horse-power.	Number of mine locomotives.	Horse-power.	Total number of engines.	Total horse-power of engines.	Number of steam boilers.
Exeter,	5	400	1	65	1	225	2	120	1	Small.	1	40	11	850	19
Prospect,	8	635	1	75	. . . .	. . . .	3	225	. . . .	. . . .	1	40	12	960	28
Mineral Spring,	4	134	1	50	1	70	1	40	5	160	. . . .	. . . .	12	454	9
Henry Shaft,	6	500	1	35	. . . .	. . . .	1	40	6	300	. . . .	. . . .	14	875	15
Midvale,	4	185	1	35	. . . .	. . . .	1	40	1	40	. . . .	. . . .	7	300	12
Maltby,	2	60	1	80	. . . .	. . . .	. . .	. . . .	. . . .	. . . .	. . . .	. . . .	3	140	24
	29	1,914	6	340	2	295	8	465	13	500	2	80	59	3,579	107

LEHIGH AND WILKES-BARRE COAL COMPANY.

Diamond,	4	400	2	140	1	80	1	80	3	215	1	30	12	945	39
Hollenback,	6	460	1	80	1	400	2	180	. . .	. .	. . . .	. . .	10	1,120	18
Empire,	7	350	2	85	1	350	4	80	1	100	2	60	17	1,025	36
Hartford,	5	388	2	80	3	566	2	80	2	80	2	70	16	1,264	31
Stanton,	3	575	3	140	1	560	3	180	2	60	1	35	13	1,550	27
Sugar Notch Shaft,	4	200	1	40	1	80	2	80	3	110	. . . .	. . . .	11	510	17
Sugar Notch Slope,	4	280	2	120	2	240	2	80	1	60	. . . .	. . . .	11	780	19
Lance,	2	100	1	50	. . . .	. . . .	1	110	3	205	. . . .	. . . .	7	465	9
Nottingham,	4	290	1	60	1	80	3	160	4	160	2	65	15	815	21
Reynolds,	2	50	1	50	. . . .	. . . .	1	20	. . . .	. . . .	. . . .	. . . .	4	120	10
Wanamie,	3	180	1	50	1	175	2	40	1	40	. . . .	. . . .	8	485	13
	44	3,273	17	895	12	2,531	23	1,090	20	1,030	8	260	124	9,979	240

DELAWARE AND HUDSON CANAL COMPANY.

Mill Creek,	4	296	1	36	. . . .	. . . .	2	202	4	122	. . . .	. . . .	11	656	23
Pine Ridge,	5	217	1	37	3	114	1	14	1	6	. . . .	. . . .	11	388	15
Laurel Run,	2	110	1	45	. . . .	. . . .	2	125	4	122	. . . .	. . . .	9	402	12
Baltimore Slope,	2	196	1	71	. . . .	. . . .	1	51	. . .	. . . .	. . . .	. . .	4	321	11

Baltimore tunnel,	1	70	1	37	2	208	2	160	2	10	1	30	9	515	16
Conyngham,	3	150	1	45	1	187	3	160	...	....	....	....	8	542	12
No. 2, Plymouth,	2	120	1	40	2	160	2	55	...	....	....	....	7	375	21
No. 3, Plymouth,	2	80	1	30	1	110	1	40	3	6	....	..	8	266	12
No. 4, Plymouth,	4	180	1	30	2	125	1	45	1	2	....	...	9	382	12
No. 5, Plymouth,	5	220	1	30	1	65	2	95	3	125	1	25	13	560	15
	30	1,639	10	401	12	969	17	950	18	393	2	55	89	4,407	149

SUSQUEHANNA COAL COMPANY.

No. 1, Breaker,	2	230	2	80	1	45	1	100	1	30	1	40	8	525	20
No. 2, Breaker,	7	1,565	1	80	1	55	4	320	3	165	6	260	22	2,445	47
No. 3, Breaker,	3	600	1	100	...	..	1	15	2	75	....	...	7	790	23
No. 5, Breaker,	8	1,600	1	80	1	210	3	180	2	40	1	60	16	2,170	36
	20	3,995	5	340	3	310	9	615	8	310	8	360	53	5,930	126

WYOMING COAL COMPANY.

Wyoming,	5	326	1	40	...	....	2	40	2	8	....	....	10	414	15
Forty Fort,	3	100	1	50	4	55	2	36	1	10	....	....	11	251	9
Harry E,	3	240	1	60	1	160	2	34	1	5	....	....	8	499	12
	11	666	3	150	5	215	6	110	4	23	....	....	29	1,164	36

MISCELLANEOUS COAL COMPANIES.

Avondale,	3	170	1	60	1	90	1	50	4	98	....	...	10	422	16
Boston,	2	80	1	50	....	...	1	25	6	58	...	...	10	213	12
No. 1, Kingston,	2	121	1	31	1	97	2	18	2	...	...	..	8	267	22
No. 2, Kingston,	3	617	1	197	1	30	2	80	5	50	3	56	15	1,030	27
Gaylord,	14	2,290	1	210	1	220	1	210	7	350	....	....	24	3,300	19
Warrior Run,	1	.	1	..	1	....	1	...	3	...	...	...	7	....	22
Franklin,	4	410	1	30	2	125	3	90	1	15	1	15	12	685	22
Enterprise,	2	144	1	30	3	40	2	23	...	....	....	....	8	237	11
East Boston,	4	180	1	60	1	120	1	30	5	...	....	....	12	360	15
Black Diamond,	2	75	1	50	....	...	1	40	9	68	....	....	13	233	18
Red Ash, No. 1,	2	80	1	40	....	....	1	20	1	6	....	....	5	146	6
Red Ash, No. 2,	....	....	1	35	....	....	....	....	....	....	...	....	1	35	2

MISCELLANEOUS COAL COMPANIES.—Continued.

NAMES OF THE COLLIERIES.	Number of hoisting engines.	Horse-power.	Number of breaker engines.	Horse-power.	Number of pumping engines.	Horse-power.	Number of fan engines.	Horse-power.	Number of donkey pumps.	Horse-power.	Number of mine locomotives.	Horse-power.	Total number of engines.	Total horse-power of engines.	Number of steam boilers.
Raubville,	3	120	1	40	....	....	1	30	1	8	....	....	6	198	11
Dodson,	2	90	1	50	1	750	1	35	2	....	....	....	7	925	11
West End,	1	30	2	55	....	....	....	....	2	....	1	30	6	115	8
Hillman,	1	30	1	30	....	....	1	15	5	50	....	....	8	125	4
Chauncey,	....	....	1	25	....	....	....	....	...	...	....	...	1	25	2
Salem Coal Company,	...	....	1	40	....	....	...	....	2	15	....	....	3	55	2
Hollenback, R. S. Poole,	1	20	1	25	...	....	....	....	....	....	....	. ..	2	45	2
Alden,	2	400	1	100	....	...	1	26	2	35	....	....	6	561	6
Clear Spring,	2	200	1	50	. ..	....	....	....	2	....	....	....	5	250	12
	51	5,057	22	1,208	12	1,472	20	692	59	753	5	101	169	9,237	250

RECAPITULATION.

Lehigh Valley Coal Company, ...	29	1,914	6	340	2	295	8	465	13	500	2	80	59	3,579	107
Lehigh and Wilkes-Barre Coal Company, . .	44	3,273	17	895	12	2,531	23	1,090	20	1,030	8	260	124	9,079	240
Delaware and Hudson Canal Company, . . .	30	1,639	10	401	12	969	17	950	18	393	2	55	89	4,407	149
Susquehanna Coal Company, ...	20	3,995	5	340	3	310	9	615	8	310	8	360	53	5,930	126
Wyoming Valley Coal Company, ...	11	666	3	150	5	215	6	110	4	23	. . . .	. . . .	29	1,164	36
Miscellaneous Coal Companies, ...	51	5,057	22	1,208	12	1,472	20	692	59	753	5	101	169	9,227	250
Total of all coal companies, ...	185	16,544	63	1,334	46	5,792	83	3,922	122	3,009	25	856	523	33,396	908

TABLE No. 11—*Showing the state of ventilation in all the collieries operated*

NAMES OF THE COLLIERIES.	Revolutions of fan.	Total cubic feet of air per minute at the inlet.	CUBIC FEET OF AIR PER MINUTE PASSING WORKINGS IN EACH				
			No. 1.	No. 2.	No 3	No 4.	No. 5.
1. Exeter Shaft,	60	122,647	18,692	15 340	18 741	12,790	
2. Prospect Shaft,	42	131,768	14.846	18,098	8,960	7.540	8 742
3. Oakwood Shaft,	42	130,302	29,632	15,147	19,635	11,040	9,320
	40						
4. Henry Shaft,	65	119,443	18 065	12,470	17.236	19 226	18,065
5. Midvale Slope,	30	53 050	21,650	5,000	4 160	6,225	6,890
6. Mineral Spring Slope,		127,000	10,000	18 000	33,500	34 450	
7. Baltimore Slope,	85	85,472	20,287	22,350	19.662		
8. Mill Creek Slope,	42	126,541	10,325	22.350	11 750	5.545	10 525
9. Laurel Run Slope,	73	118,056	6 877	7.541	41,618	6 702	
	64						
10. Pine Ridge Shaft,	70	84,832	11,187	5 480	13.345	9 252	10 512
11. Baltimore Tunnel,	65	155 820	32,925	32,320	84,730		
12. Conyngham Shaft,	96	114.718	14,437	26,892	27,162	26,462	
13. No. 2 Shaft, Plymouth,		66 620	34 965	13.200			
14. No. 3 Shaft, Plymouth,	70	41 271	18,777	20.636			
15. No. 4 Shaft, Plymouth,	80	52 087	14,327	18,307			
16. No. 5 Shaft, Plymouth,	112	145,530	9,700	6,087	8,275	18,700	18 187
17. Hollenback Shaft,	43	215 200	44,750	35,375	35,500	35,000	40 000
18. Empire Red Ash Veln, Empire, Baltimore, and Hillman Veins,	90	*	9 925	12 482	6 125	32 612	
		*	35,000	44,050	15,165		
19. Diamond Shaft,	70	184,450	17,037	15.493	78,125	75,000	
20. Hartford New Slope,	50	83 330	12,100	8 675	11,600	10,650	10,650
20. Hartford No. 1 and No. 2 Slope,	50	59,170	9,675	8 040	11,650	5,260	4,570
21. Sugar Notch Shaft,	85	150,230	21,080	9,000	13,800	11,500	14,000
22. Sugar Notch Slope,	95	73,160	22,580	13,992	12,935	11,850	
	75						
23. Nottingham Shaft,	50	95,475	15 225	5,925	15 200	18.000	14 325
24. Reynolds Slope, No. 16,	75	80 700	16 965	10,925	22,615	16.775	
	65						
25. Wanamie Slope,	80	92 200	17,125	16,800	10.250		
26. No. 1 Slope, Nanticoke,	55	94,543	21,590	11,186	22,070	5,601	
27. No. 2 Slope, Nanticoke,	65	104.250	32,500	31,125	28,000		
28. No. 4 Slope, Nanticoke,	80	86,562	41,200	27,380			
29. No. 1 Shaft, Nanticoke,	70	97,626	34 855	10 636	25,315	14 324	12,073
30. No. 2 Shaft, Nanticoke,	57	79,605	14 442	17.080	14,750	21,091	
31. No. 2 Tunnel, Nanticoke,		15 637	10,440				
32. No. 4 Tunnel, Nanticoke,	65	25 240	12 148				
33. Grand Tunnel, Nanticoke,	62	24,040	15,785	6,715			
34. Avondale Shaft,	135	68,751	11,443	10 305	8,948	21,925	7,469
35. Boston Shaft,	117	36 727	18,695	7,755			
36. Enterprise Shaft,	80	50,350	7.550	7,175	6 925	8 900	
37. Wyoming Shaft,	48	97,250	17,300	23,575	23,700	17 375	
38. Wyoming Slope,		16 300	14.200				
39. Forty Fort,	64	51,025	7,650	13,400	11,525	11,575	
40. Harry E.,	90	42,250	11,500	13.250	11,000		
41. No. 1 Shaft, Kingston,		54,165	11,740	12,850	7,890		
42. No. 2 Shaft, Kingston,	45	107,060	16,010	12,125	27,910	10,830	11,525
43. Stanton Shaft,	95	43,189	24,515	10,680			
44. Gaylord Slope,	55	160,000	30,000	30,500	15,000	4.000	
45. Franklin Slope,	75	52,041	21.882	21,765			
46. Franklin Brown Slope,	90	22 628	11,773				
47. Maltby Shaft,	Not In operation.						
48. Dodson Shaft,		17.300	7,775	2 690	3,025		
49. East Boston Shaft,	83	78,630	18,032	14,200	21.950		
50. Warrior Run Slope,	65	58,400	18,875	8.000	7,275	7,175	
51. Black Diamond,	80	Not meas'd.	17,796	18,265			
52. No. 1, Red Ash Coal Company,	75	70,080	7 920	12 200	28,000		
53. No. 2, Red Ash Coal Company,	75	22 140	5,350	4,217	8,050	14,940	
54. Raubville Drifts, Boss vein,	60	15,850	15,000				
55. Raubville Red Ash,	60	19,100	19,100				
56. Hillman Slope,	70	4,050	3 200				

in the Wilkes-Barre District, at the close of the year ending December 31, 1882.

NEAR THE FACE OF SPLIT.			Total cubic feet of air per minute passing near the face of workings.	NUMBER OF PERSONS EMPLOYED IN EACH SPLIT ON THE DAY SHIFT.								Total cubic feet of air per minute passing through the outlet.	
No. 6.	No. 7.	No. 8.		No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.		
. . .	. . .	. . .	65,563	64	57	57	42	. . .	. .	. .	. . .	121.878	1
15,840	18,580	19,705	112,311	. . .	70	4	7	. . .	14	50	. . .	137.390	2
9,860	. . .	. . .	94,634	34	24	12	Old w	orking s.		. . .	. . .	133,398	3
. . .	. . .	. . .	85 062	59	13	12	18	18	. . .	. . .	. . .	125.927	4
. . .	. . .	. . .	43 925	48	Old w	orking s.		. . .	. . .	. . .	. . .	59.000	5
. . .	. . .	. . .	95 950	19	16	53	25	. . .	. . .	. . .	. . .	156 500	6
. . .	. .	.	62 299	48	48	. . .	. . .	. .	. .	. .	. .	100 125	7
9,760	2,250	9,650	82,155	53	20	9	4	17	42	6	31	129,857	8
. .	. . .	. . .	62,738	45	21	67	24	. . .	. .	. .	. . .	100,967	9
4 397	. . .	. .	54,173	10	45	12	8	50	12	. . .	. . .	135,125	10
. . .	. .	.	149,975	57	59	5	and lo	comoti	ve.	. . .	. . .	190,400	11
. . .	. . .	.	94 953	. . .	40	50	20	.	. . .	. . .	. . .	120 860	12
. . .	. . .	. . .	48,165	144	61	. . .	. . .	. . .	. . .	. . .	. . .	70,145	13
. . .	. . .	.	39,383	105	134	. . .	. . .	. . .	. . .	. . .	. . .	41 092	14
. .	. .	. . .	32,634	53	39	. . .	. . .	. .	. .	. .	. . .	53,235	15
57.777	. .	. . .	118.726	38	7	16	63	65	48	and lo	co've.	154,212	16
. . .	. . .	. .	191,625	37	140	72	Old w	orking s.		. . .	. . .	295,472	17
. . .	. . .	. . .	61,244	55	60	33	160	. . .	. . .	. . .	. . .	61,925	18
. . .	. . .	. . .	109,965	110	35	22	. . .	. .	. . .	. . .	. . .	117,350	
. . .	. . .	. . .	185,655	45	49	6	Old w	orking s.		. . .	. . .	187,575	19
10.166	. . .	. . .	63,841	46	13	48	14	38	48	. . .	. . .	94.630	20
8.100	. .		39,195	48	40	44	17	8	8	. .	. .	63,353	
11,500	14,280	22,500	117,660	37	18	36	34	45	50	35	40	156,920	21
. .	. .	. . .	61,367	40	60	46	47	. . .	. . .	. . .	. . .	78,525	22
. . .	. . .	. . .	68,675	80	32	84	102	107	. . .	. . .	. . .	109.600	23
. . .	. .	. . .	67,280	67	25	104	55	. . .	. . .	. . .	. . .	95 622	24
. . .	. . .	. . .	44,175	116	54	41	. . .	. . .	. . .	. . .	. . .	100.250	25
. . .	. .	. .	60,447	20	10	41	20	. . .	. . .	. . .	. . .	119,385	26
. .	. . .	. . .	91.625	35	49	50	. . .	. . .	. . .	. . .	. . .	112,000	27
. . .	. . .	. . .	68.560	150	22	. . .	. . .	. . .	. . .	. . .	. .	92,985	28
. . .	. . .	. .	97,203	28	81	42	25	26	. . .	. . .	. . .	124,722	29
. . .	. . .	. . .	67,363	16	8	8	111	. . .	. . .	. . .	. . .	78,317	30
. . .	. . .	. . .	10,440	65	. . .	. . .	. . .	. . .	. . .	. . .	. . .	16.159	31
. . .	. . .	. .	12,148	65	. . .	. . .	. . .	. . .	. . .	. . .	. . .	39,481	32
. .	. . .	. . .	22,500	90	. . .	. . .	.	.	. . .	. . .	. . .	24.810	33
. . .	. . .	. .	60,090	45	35	42	55	22	. . .	. . .	. . .	73,901	34
. . .	. .	. . .	26,450	42	7	. . .	. .	. .	. .	. . .	. . .	40,102	35
. . .	. .	. . .	30,550	71	54	59	55	. . .	. . .	. . .	. . .	52,475	36
. .	. . .	. . .	81,950	50	50	50	50	. . .	. . .	. . .	. . .	98,150	37
. .	. . .	. . .	14,200	22	. . .	. . .	. .	. . .	. . .	. . .	. . .	16,500	38
. . .	. . .	. . .	44,150	45	48	44	25	. . .	. . .	. . .	. . .	62,050	39
. . .	. . .	. . .	35,750	20	24	55	. . .	. . .	. . .	. . .	. . .	48.000	40
. . .	. . .	. . .	32,480	48	55	20	. . .	. . .	. . .	. . .	. . .	45,792	41
. . .	. . .	. . .	78,400	48	60	80	25	16	. . .	. . .	. . .	137,502	42
. . .	. . .	. . .	35,195	33	6	6	. . .	. . .	. . .	. . .	. . .	83,947	43
. . .	. . .	. . .	79,500	80	40	8	16	. . .	. . .	. . .	. . .	165,000	44
. . .	. . .	. . .	43,647	60	50	. . .	. . .	. . .	. . .	. . .	. . .	62,145	45
. . .	. . .	. . .	11,773	90	. . .	. . .	. .	. . .	. . .	. . .	. . .	35,375	46
. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	47
. . .	. . .	. . .	13,490	46	16	24	. . .	. . .	. . .	. . .	. . .	22,565	48
. . .	. . .	. . .	54,182	45	72	68	. . .	. . .	. . .	. . .	. . .	88,962	49
. . .	. . .	. . .	41,325	. . .	27	24	22	. . .	. . .	. . .	. . .	Not m'd	50
. . .	. . .	. . .	36,061	100	100	. . .	. . .	. . .	. . .	. . .	. . .	36.900	51
. . .	. . .	. . .	48,120	31	25	46	. .	. . .	. . .	. . .	. . .	76,800	52
. . .	. . .	. . .	32,557	14	29	47	27	. . .	. . .	. . .	. . .	39,471	53
. . .	. . .	. . .	15,000	33	. . .	. . .	. . .	. . .	. . .	. . .	. . .	15.800	54
. . .	. . .	. . .	19.000	30	. . .	. . .	. . .	. . .	. . .	. . .	. . .	19.200	55
. . .	. . .	. . .	3,200	46	. . .	. . .	. . .	. . .	. . .	. . .	. . .	3,950	56

LUZERNE AND CARBON COUNTIES.

EASTERN DISTRICT.

Hon. ROBERT E. PATTISON,

Governor of the Commonwealth of Pennsylvania:

SIR: In compliance with the twenty-second section of the act of Assembly approved March 3, 1870, which provides "it shall be the duty of each inspector to make an annual report of his proceedings to the Governor of the Commonwealth at the close of every year," etc., I, as Inspector of Coal Mines for the Eastern or Scranton District, and in compliance with the requirements of the statute, have the honor to herewith transmit you my annual report.

I have endeavored to present you, in detail, the complete statistics in tabulated form of everything pertaining to the coal mines and collieries and the mining of coal, so far as could possibly be ascertained, in this mining district. The delay in forwarding my report has been occasioned by the tardiness of a few of the operators in not furnishing me necessary data.

By reference to table No. 1, it will be seen that seventy-five persons lost their lives in and about the coal mines and collieries during the past year, and the causes which produced their deaths are given in detail. Of this number of fatal accidents, six are not chargeable to the preparation or production of coal, for the following reasons: One died of heart disease in the mines; one was dragged to death in the streets of Pittston, on account of a dog biting and scaring the mule upon which he was riding, throwing the boy, who, in falling, became entangled in the traces; another boy met his death similarly, with the exception that some small boys frightened his mule; and three persons sinking an air shaft at the Oxford colliery, Scranton, were killed by being hit by a falling mass of ice which had accumulated on the sides of the shaft, which, in falling, carried with it a frame platform erected for their better protection.

As a result of the fatality during the year, there are forty-three widows and one hundred and thirty-three orphans, left to mourn the early demise

of kind husbands and loving fathers. Happily, there were a few families left in comfortable circumstances, but in a majority of the cases the families are very indigent. Of the orphans, many are able to maintain themselves and contribute considerably towards the support of their widowed mothers and fatherless brothers and sisters.

Table No. 2 gives the names of persons seriously injured as eighty-eight, (88,) and the cause and description of their injuries.

Table No. 3 gives the names of persons slightly injured as two hundred and fifty three, (253,) and the cause and description of their injuries.

Table No. 4 gives the number and classification of employés; the number of horses and mules, kegs of powder used, tons of coal mined, days worked, persons killed and seriously injured at each colliery; tons of coal mined for each death, serious accident, and employé.

Table No. 5 gives the name of each coal mine or colliery, where located, by whom operated, and the names of the superintendents, mining bosses, and outside foremen.

Table No. 6 gives the name of each coal mine or colliery, the number and local name of each split of air, with the number of persons working in the same; the mode, amount, and condition of the ventilation, and other statistics.

There has been a marked improvement in the ventilation of the mines during the past year, inasmuch as there has been erected sixteen new fans, making a total of seventy-five fans in operation in the district.

Table No. 7 gives the name of each coal mine or colliery, and the means by which each of them reach the coal. I have given the depth and dimensions of each shaft opening; the size, depth, and degree of inclination of each slope, and the size and distance to the coal in each drift or tunnel. Other information of considerable moment to the mining public, and as regards the compliance of these mines with the mine ventilation law, will be found in this table.

Table No. 8 gives the name of each coal mine or colliery; the number and dimensions of boilers; date of and condition at last examination; whether they have steam gauge or safety valve; pressure carried by each set; the machinery of each coal breaker; the number of each class of steam engines, and their respective horse-power.

The greatest cause of accidents in this district is due to falls of coal and roof. The number could be wonderfully diminished, if the parties having charge of the mines would enforce the mine regulations, established for the better protection of life and property, and compel the workmen to rigidly observe these rules. This can be readily done, as the mining bosses have the remedy in their own hands. They can compel the workmen to be vigilant and cautious, by having them adopt every precaution to properly secure their working places and make them safe to a certain extent. Of course accidents will occur, no matter how cautious and careful the parties concerned may be. I find in many cases that after the mining bosses give

an order to prop the place or take down loose material that the miners pay no attention, but work away, heedless of the great danger which imperils their lives, until they are caught, and then, alas, too late in very many instances. In my investigations after accidents I ascertain, quite frequently, that the mining boss passes through the same place in which he gave such an order, and finds the place in precisely the same condition as when he last visited it, and passes on merely asking the reason why the party did not obey his orders. A mining boss who is so indifferent to such a pressing duty is not a proper person to have charge of a mine, and I hold he is responsible, in a manner, for any accident which may occur, if he does not insist that all working places shall be secured within a reasonable time after the miner thereof has been notified of its unsafe condition. When a mining boss or his assistants are going their rounds through the mines hereafter, I have recommended that when they find any dangerous places which require propping or "taking down," as the case may be, that when instructions are given the miner to secure the place, orders at the same time be given the driver, or whoever has charge of distributing the empty mine cars, not to give any more cars to the miner in that particular place until his orders are explicitly obeyed. By doing this it would compel the miners, in every instance, to keep their places secure or lose their time, on account of not receiving any cars. A proper observance of this rule would be the means of saving many valuable lives and prevent a large percentage of accidents.

It would be ungenerous of me, without alluding to the pleasing fact, that in all my labors for the proper enforcement and observance of the mine ventilation law, that my efforts have been most heartily seconded by nearly all persons having charge of coal mines and collieries in this district. They have afforded me every facility for ascertaining the condition or their mines, and, with probably a few exceptions, my recommendations concerning the same have been favorably acted upon. To the credit of the operators, it may be said that they try to live up as nearly to the letter of the law as possible, and, were it not for the rashness and utter contempt for danger that many of the employés manifest, the affairs of this mining district, as regards accidents, would be in a condition not only gratifying to you, but in pleasing contrast with the other industrial interests of the Commonwealth.

Respectfully submitted,

PATRICK BLEWITT,
Inspector of Mines, &c.

Scranton, *March 29, 1883.*

GENERAL IMPROVEMENTS.

Eagle Shaft.

This shaft has been idle for some years. It has been cleaned out, and a new slope sunk from the Pittston or fourteen-foot seam to the No. 1 top and bottom seam. They have erected a new breaker, with a capacity of five hundred tons of coal per day; have put in new boilers and machinery, and also erected a new fan, eighteen feet diameter by four feet face.

Tompkins Shaft.

They have sunk the shaft from No. 1 top and bottom seam to No. 2 or Skidder seam. They have also built a new breaker, with a capacity of preparing about four hundred tons of coal per day.

Fairmount Shaft.

There has been sunk from No. 1 top and bottom to No. 2 or Skidder seam, for the purpose of second opening, a shaft two hundred feet deep.

Florence Shaft Colliery.

This is a new colliery just being opened. It is located on lot No. 38, Pittston township, Luzerne county. Shaft is $10\frac{1}{2}\times20$ feet and one hundred and twenty-five feet deep to the B or Stark seam of coal. Air shaft is 8×12 feet and sunk about sixty feet. Breaker is in course of construction, to contain four main screens, and to have a capacity of eight hundred tons per day. Breaker will be finished about April 1st next. Coal will be shipped by Pennsylvania Coal Company. The colliery is connected with railroad by a branch track three thousand feet long.

Mosier Shaft.

They have built, in 1882, and put in operation, a gravity plane five hundred feet long; also sunk a slope in coal four hundred and fifty feet long to lowest basin.

Twin Shaft.

Have put in four new boilers; also changed and put up double doors in mines; also made the brattices air-tight, which is a great improvement to ventilation.

Phœnix Shaft.

Has been sunk to lower seams of coal. They have also finished second opening shaft and erected a fan on top of it. Fan sixteen feet diameter by four feet face.

Stetler Shaft.

This shaft and second opening shaft has been completed. There has been six more new boilers put in place, forty feet long by thirty-four inches in diameter. They have also erected a new fan, twelve and a half feet

diameter by three and a half feet face. Everything about this colliery is first-class.

Hillside Shaft.

A plane has been extended six hundred and fifty feet long and a slope three hundred feet.

Spring Brook Mines.

A self-acting plane six hundred and fifty feet long is in course of construction, and a slope three hundred and fifty feet long finished.

Pennsylvania Coal Company.

Are sinking a new shaft at Lackawanna, Old Forge township. It is down forty-five feet below the surface. They are also pumping out the water in the *Carbon Hill shaft*, preparatory to working the coal out of that property.

Dunn Colliery.

Is a new one, located in Old Forge township, about one thousand five hundred feet south of the *Sibley shaft*. It is owned by the Pennsylvania Anthracite Coal Company. There is a slope sunk to the coal, and are now sinking a shaft, which is down about fifty feet. There is also a new breaker in course of construction. Capacity, about six hundred tons per day.

Greenwood Colliery.

Shaft No. 1 is now down to the coal, and they are driving towards second opening. They have erected a new boiler, engine, and head house, and put in place new boilers and machinery. They have also built a new fan, fourteen feet diameter by four feet face.

National Mines.

The shaft has been finished and sunk to No. 5 seam of coal, which the company commenced in 1881. The second opening is not complete yet.

Pine Brook Shaft.

The second opening and air-shaft, fourteen feet circular, that was commenced in 1881, has been finished, and the company have erected over it a double or two fans on one shaft. They are seventeen and a half feet in diameter by four feet face. These fans are fastened on the same shaft, about eight feet apart. They are the first of this pattern erected in this district, and they give a larger volume of air than any others in it. The style and drawings of this fan are fully described in Mr. G. M. Williams' report of last year, page 148 to 151.

Lucas Shaft.

This is a new shaft, located at Green Ridge, city of Scranton—is owned and operated by the Lucas Coal Company, Limited. They are now working the G or big seam of coal. The shaft is 10×30 feet; depth one hundred and fifty feet to coal. The breaker is one of the largest in the val-

ley. Capacity, one thousand tons of coal per day. It contains seven hundred thousand feet of lumber. The machinery consists of one pair first-motion hoisting engines, 22″×36″; will hoist a car of coal from the bottom of the shaft to the head in ten strokes of the engine. The breaker engine is 16″×36″. The mine is ventilated by a fan 12 feet diameter by 3½ feet face, D. L. & W. pattern. The breaker machinery consists of one pair of mud screens, one pair cast center screens, one pair of main screens 6 and 8 feet in diameter and 24 feet long, double jackets, one pair pony screens 5 and 7 feet diameter and 18 feet long, double jackets, one pair 29 and 36 main rolls, one pair pony rolls 19 and 29. This company commenced sinking their shaft December, 1881, and are now shipping from one hundred to three hundred tons of coal per day. The coal is of the best quality, and the seam is 11 feet thick. They sell their coal to the D. & H. C. Co., and the Scranton Steel Company. The second opening is now completed.

Yours, &c.,

ROBERT REVES, *Superintendent.*

Throop Shaft—Jermyn No. 4.

This colliery is now completed and under full headway, and up to the requirements of law, and one of the most substantial in this district.

Lackawanna Coal Company's Colliery.

The main shaft is down to coal, the second opening shaft is not quite finished, the breaker is built and they are shipping a little coal, the boilers, engines, machinery and buildings are of the most substantial kind, and when finished, will compare favorably with any in this district.

Jones Simpson and Company's New Shaft.

This is a new colliery; it consists of a shaft and drift; they have reached the coal in both, and are connected with their breaker by a railroad track, laid with steel rails, the distance between the shaft and breaker is 11,100 feet long. It is to be operated by a mine locomotive.

Erie Shaft.

They have re-opened Keystone tunnel, which was commenced in 1874, situated about a mile east of the shaft on D. & H. C. Co.'s gravity railroad track. A small breaker is here erected, of a capacity of 350 tons of coal per day, and so arranged that part of the coal therefrom may be shipped *via* the gravity railroad and part run through the Erie breaker, or all may be shipped either way.

Forest City Mines.

A new shaft has been sunk here. The area is 10×20 feet, and 125 feet deep to the coal from the surface landing. The seam reached is about five feet in thickness. The breaker is located about 2,000 feet from the shaft, and has a capacity of 400 tons of coal per day. The coal will be shipped *via* the Jefferson branch of the Erie railroad.

Belmont Mines.

There has been a new fan erected here during the year, which gives general satisfaction.

Delaware, Lackawanna and Western Railroad Company's Oxford Shaft.

Sunk main shaft from Rock vein to Clark, a distance of about 165 feet, and sunk a new air-shaft from surface to Clark vein, 354 feet; 10×26 feet for ventilation, and to hoist men and let down material. We will set a fan over this one, and a fan at the old, or main shaft, to ventilate part of it and all of Bellevue slope, so as to leave Bellevue fan for Bellevue shaft alone. The slope at Diamond shaft E vein is completed, and working all right. At the Brisbin shaft we have two of the gravity planes we alluded to last year, all ready and working. The third one is very near ready. At Cayuga shaft we are driving a tunnel, or plane, from G to Diamond vein, to let down the coal to G vein. Expect to be ready in 1883. At Sloan shaft we are resinking from G vein to Clark; are also sinking a second opening from G to Clark—size, 8×10 feet in the clear. We intend to make this to that men can go up or down. Storrs shaft being sunk 416 feet, we are now opening gangways in G or big vein 285 feet down. Not developed yet.

Yours, respectfully,

B. Hughes.

Scranton, *March 6, 1883.*

Providence, *February 23, 1883.*

Patrick Blewitt, Esq.,

Inspector of Coal Mines:

Dear Sir:—The following are the improvements made in and around the D. & H. C. Co.'s mines for the year ending December 31st, 1882:

Coal Brook Mines.

Have graded a new gravity plane to let coal down on north-east side. Have driven seventy feet of rock tunnel, 7×9 feet, to open No. 3, or four-foot vein from Lackawanna tunnel, in bottom coal on a level with breaker. Have about 600 feet of heading cut in coal.

No 1 Shaft.

Have graded a new gravity plane to let coal down on north-west side.

Powderly Slope.

Commenced pumping out water October 20th; are also building schutes and outside plane.

Jermyn No. 1.

Have finished sinking inside slope to basin. Put up a new 17-foot fan, by four-foot face, on air-shaft that was being sunk last year.

Grassy Island Shaft.

Have sunk fan-shaft, 11×14 feet, 252 feet deep to the Grassy Island vein.

Have put up a 20-foot fan, by 5-foot face, run direct by two engines, one on each end of fan-shaft.

Eddy Creek Shaft.

New breaker all ready. Expect to start on February 15th. Have sunk a new slope in south dip 600 feet long to first basin.

Marvine Shaft.

Finished sinking slope on north dip. Finished second opening to Leggett's Creek in Diamond vein. Put three drill-holes down from Diamond vein to 14-foot to take water from small basin—saves one steam-pump.

Leggett's Creek Shaft.

Put new buntings and guides in hoisting shaft. Are now taking 100 cars per day of coal from the Diamond vein. Put three drill-holes down from Diamond to 14-foot vein, to take water from basin—saves two steam-pumps.

Von Storch Mines.

Have driven under the river from foot of slope in 14-foot vein, to open coal on south-east side of river. Are cutting up the north-west rise in Diamond vein to outcrop to get air-shaft for intake air; also put in new 17-foot fan.

Yours, etc.,

ANDREW NICOL,
General Superintendent of Mines.
Per A. B. NICOL.

A LIST *of Ambulance Districts in the Eastern District of Lazerne and Carbon counties, for the year ending December 31, A. D. 1882.*

Number of ambulance districts.	Names of Coal Mines or Collieries in Each District.	No. of ambulances.	No. of stretchers.
1	Forest City Colliery,		2
2	Belmont Mines and Hendricks Mines,	1	4
3	Coal Brook Mines, No. 3 Shaft, and White Bridge Mines,	1	6
4	Erie Shaft,	1	2
5	Jermyn No. 1 Shaft and No. 2 Slope,	1	4
6	White Oak Mines, Eaton Mines, and Pierce Coal Company's Mines,	1	6
7	Filer & Levy's Shaft and Slope,	1	4
8	Eddy Creek Shaft, Grassy Island Shaft, and Lackawanna Coal Company's Shaft,	1	6
9	Throop Shaft and Slope,	1	4
10	Pancoast Shaft and Slope,	1	4
11	Storr's Shaft and Elk Hill Mines,	1	4
12	Gipsy Grove Shaft and No. 2 Shaft,	1	4
13	Fair Lawn Slope and Green Ridge Slope,	1	4
14	Pine Brook Shaft,	1	2
15	Von Storch Slope, Legett's Creek Shaft, Marvine Shaft, Jermyn No. 3 Shaft, and Lucas Shaft,	1	10
16	Brisbin Shaft and Cayuga Shaft,	1	4
17	Tripp's Slope, No. 2 Diamond Slope, and No. 2 Diamond Shaft,	1	6
18	Oxford Shaft, Mount Pleasant Slope, and Bridge Coal Company's Slope,	1	6
19	Dodge Shaft, Bellevue Shaft and Slope, and Scranton Coal Company's Mines,	1	8
20	Capouse Shaft,	1	2
21	Central Shaft, Hampton Shaft, Sloan Shaft, Archbald Shaft, Continental Shaft, and Hyde Park Shaft,	1	12
22	Pyne Shaft and Sibley Shaft; also Archbald Shaft,	1	6
23	Taylor Shaft,		2
24	Meadow Brook Shaft, and Tunnel and National Slope,	1	4
25	Greenwood Shaft, Slope and Tunnels,	1	4
26	Spring Brook Mines and Hillside Shaft,	1	4
27	Law Shaft, No. 13 Shaft, No. 12 Shaft, and Stark Shaft,	1	8
28	Stetler Colliery,	1	2
29	Heidelberg Shaft and Ontario Breaker,	1	2
30	Butler, Mosier, and Fairmount Shafts,	1	6
31	Phœnix Shaft, Twin Shaft, and Columbia Tunnel,	1	6
32	Nos. 1, 8, 9, and 10 Shafts, and No. 1 Tunnel; also Barnum Nos. 1 and 2 Shafts.	1	10
33	Nos. 4, 5, 6, 7, and 11 Shafts, and Nos. 2 and 4 Slopes,	1	14
34	Tompkins Shaft and Eagle Shaft,	1	4
35	Everhart Mines,		2

Note.—First column in Table No. 7, continued, shows where ambulances and stretchers are located.

TABLE No. 1.—*List of accidents resulting in death, reported to the inspector of including all of Lackawanna, and a portion of Wayne and Susquehanna counties, ending 31st day of*

DATE.	No. killed.	Names.	Age.	Colliery where Accident occurred.	Nationality.
Jan. 9	1	John Scanlon, . . .	14	Jermyn, No. 3, D. & H. C. Co. & D. L. & W., Scranton	American, .
10	2	James Curran, . .	16	Grassy Island Shaft, D. & H. C. Co., Oliphant, .	American, .
11	3	Robert Marshall,	47	Central Shaft, D. L. & W., Hyde Park, Scranton,	Welsh, . . .
13	4	Thomas Williams,	27	Taylor Shaft, D. L. & W., Lackawanna twp., . .	Welsh, . . .
17	5	Peter Malia, . . .	48	Elk Creek Mines, B. & B., Fell township, . . .	Irish, ...
25	6	Elias Thomas, .	28	Archbald Shaft, D. L. & W., Lackawanna twp.,	Welsh, . . .
30	7	Joseph Prethero, .	24	Brisbin Shaft, D. L. & W., Providence, Scranton,	Welsh, . . .
Feb. 21	8	Hiram Watkins, .	13	Sloan Shaft, D. L. & W., Lackawanna twp., . .	American, .
21	9	William Arnold, .	16	Sloan Shaft, D. L. & W., Lackawanna twp., . .	American, .
24	10	James Gwynn, . .	53	Throop Shaft, J. Jermyn, Priceville, . .	Welsh, . . .
28	11	Anthony McHale,	50	Central Shaft, D. L. & W., Hyde Park, Scranton,	Irish, ...
28	12	William Jones, .	16	Spring Brook Mines, H. C. & I. Co., Lacka. twp.,	Welsh, . .
Mar. 6	13	William Faghey, .	15	Pyne Shaft, D. L. & W., Lackawanna twp., .	Irish, ...
6	14	Patrick Commons,	15	Erie Shaft, H. C. & I. Co., Gleenwood borough,	Irish, ...
21	15	Charles Jones, . .	30	Jermyn, No. 1, D. & H. C. Co., Jermyn borough,	Welsh, . . .
25	16	John V. Lewis, .	27	Hampton Shaft, D. L. & W., Lackawanna twp.,	Welsh, . . .
27	17	John Slavin, ...	44	Bridge Mines, B. C. Co., Hyde Park, Scranton, .	Irish, ...
28	18	Charles Davies, . .	58	Legitt's Creek Shaft, D. & H. C. Co., Prov. . Scra'n,	Welsh, . . .
Apr. 10	19	John Watkins, . .	55	Hyde Park Shaft, D. L. & W., Hyde Park, Scra'n,	Welsh, . . .
12	20	John Price, .	44	Central Shaft, D. L. & W., Hyde Park, Scranton,	Welsh, . . .
14	21	Pat. Cunningham,	45	Gypsy Grove Shaft, P. C. Co., Dunmore,	Irish, . . .
15	22	Benjamin Neagley,	17	Capouse Shaft, L. I. & C. Co., Hyde Park, Scran'n,	German, . .
May 15	23	Samuel Robinson,	40	Marvine Shaft, D. & H. C. Co,, Prov., Scranton,	English, . .
15	24	John Reed,	58	Barnum Shaft, Penn'a C. Co.. Marcy twp.,	Irish, . . .
18	25	David Williams, .	22	Cayuga Shaft. D. L. & W., Providence, Scranton,	Welsh, . .
19	26	John Kinker, . .	42	No. 2 Shaft, Penn'a C. Co., Dunmore borough, .	German, . .
20	27	William Miskell, .	13	Greenwood Mines, P. A. C. Co., Lacka. twp., .	Irish, ...
22	28	James Dougherty,	39	Barnum Shaft, Penn'a C. Co., Marcy twp., . .	Irish, ...
June 7	29	Michael Sullivan, .	33	Taylor Shaft, D. L. & W., Lackawanna twp., . .	Irish, . . .
26	30	Thomas Riley, . .	32	Meadow Brook Mines, W. C. & Co., Scranton, .	Irish, . . .
July 1	31	Patrick Gillen, .	15	Brisbin Mines, D. L. & W., Prov., Scranton, . .	Irish, ...
7	32	Patrick Purcel,	40	Law Shaft, Penn'a C. Co., Pleasant Valley, . .	Irish, ...
14	33	James McDonough,	16	Gypsy Grove Colliery, P. C. Co., Dunmore bor.,	Irish, .
18	34	George Staples,	14	Mt. Pleasant Slope, M. P. C. Co., H. P., Scranton,	American, .
20	35	Hugh McKay, . .	42	Brisbin Shaft, D. L. & W., Prov., Scranton, . .	Scotch, . .
20	36	William Johnson,	50	Central Shaft, D. L. & W., H. P., Scranton, . .	Welsh, . . .
20	37	James B. Hickey, .	34	Central Shaft, D. L. & W., H. P., Scranton, .	American,
27	38	George Allen, . . .	42	Mt. Pleasant Slope, M. P. C. Co., H. P., Scranton,	Welsh, . .
27	39	Thos. E. Williams,	40	Continental Mines, D. L. & W., Lacka. twp.,	Welsh, . .
Aug. 2	40	John Higgins, .	46	Von Storch Mines, D. & H. C. Co., Prov., Scranton,	Irish. . . .
14	41	John Weir, ...	44	No. 13 Shaft. Penn'a C. Co., Old Forge twp., .	Scotch, . . .
15	42	Mich. Mulchrone,	26	Brisbin Shaft, D. L. & W., Prov., Scranton,	Irish, . . .
16	43	Henry Parry, . .	59	No. 2, Diamond Slope, D. L. & W., H. P., Scranton,	Welsh, . . .
26	44	Luke M. Vissick, .	48	Jermyn, No. 1, D. & H. C. Co., Jermyn bor., .	English, .
29	45	Henry Stetler, . .	12	Mount Pleasant Breaker, Hyde Park, Scranton,	German, . .
29	46	Evan Price, ...	30	Throop Shaft, J. Jermyn, Priceville, . . .	Welsh, . .
29	47	Jacob Rupp, ...	16	No. 13 Shaft, Penn'a C. Co., Old Forge twp., . .	American, .
Sept. 14	48	John T. Jones, .	36	Scranton C. Co. Mines, D. L. & W., Lacka. twp.,	Welsh, . .
21	49	Anthony Daly, . .	15	Slope No. 4, Penn'a C. Co., Jenkins twp., ...	American, .

the Eastern District of the Wyoming coal fields, Luzerne and Carbon counties, now State of Pennsylvania, and the cause as shown by his investigation for the year December, A. D. 1882.

Occupation.	Widows.	Orphans.	Nature or Cause of Death.	No. killed.
Outside-driver,			Killed instantly by being caught between a mine car and rail placed across the track under chutes of the breaker to keep the mule from running away,	1
Driver,			Killed almost instantly by a piece of coal falling on him while standing on safety-carriage at bottom of shaft when he got on to be hoisted to the surface,	2
Miner,	1	3	Killed instantly by a fall of top coal,	3
Mason,	1	1	Killed instantly by an explosion of fire-damp which was caused by himself,	4
Laborer,		3	Killed instantly by a fall of roof,	5
Miner,			Killed instantly by a fall of top coal,	6
Laborer,	1	1	Killed almost instantly by a fall of roof,	7
Door-boy,			Both these boys, it seems, were at a miner's box, when, from some cause, an explosion of powder took place, instantly killing Watkins; Arnold lived until next morning,	8 9
Miner,	1	11	Killed instantly by falling down the shaft, a distance of one hundred and thirty feet,	10
Miner,	1		Killed instantly by a fall of coal,	11
Driver,			Seriously injured by a fall of coal; (died twenty-one hours after,)	12
C. D. driver,			Killed; fell off a mule while going to the barn; his foot got caught in the trace-chains, and the mule dragged him with his head on the ground until life was extinct,	13
Slate picker,			Killed; got caught in breaker between the screen and planking at its side,	14
Miner,	1		Killed by a fall of top coal,	15
Shaft-sinker,	1		Killed instantly by a piece of rock striking him on the head; it flew from a blast where they were sinking an air-shaft,	16
Laborer,	1	1	Seriously injured by a runaway trip of empty cars; (died night of 30th March,)	17
Fire-boss,		1	Found dead in mines; supposed to be caused by heart disease,	18
Miner,	1	6	Killed by a fall of roof,	19
Miner,	1	3	Killed by a fall of coal,	20
Miner,	1	7	Seriously injured by a fall of roof; (died next morning,)	21
Driver,			Fell into barrel of hot water at wash-house, and got scalded; (died on 21st,)	22
Company man,	1	3	Seriously burned by an explosion of fire-damp; (died two days after,)	23
Miner,	1	10	Seriously injured by a fall of rock roof; (died twelve hours after,)	24
Miner,			Killed by a fall of top coal,	25
Headman,	1	2	Killed by falling down the shaft a distance of one hundred and twenty feet,	26
Door-boy,			Killed instantly by being caught between two loaded cars in mines,	27
Miner,	1	3	Killed by a fall of rock roof,	28
Miner,	1		Seriously injured by a fall of roof; (died two days after,)	29
Miner,	1	3	Killed instantly by a fall of top coal,	30
Driver,			Reported slightly injured by being caught between the car and rib in mines; he died July 3; got no notice of his death until July 8,	31
Miner,	1		Seriously injured by a fall of roof; (died four hours after,)	32
Driver,			Killed by being run over by a trip of loaded mine cars, (outside,)	33
Driver,			Killed in falling off his horse; his foot caught in trace-chains, and he was dragged to death,	34
Miner,	1	4	Killed by a fall of rock roof,	35
Miner,	1	4	Found dead on top of a fall of roof; there were no marks on him to show that he got killed,	36
Laborer,			Seriously injured by same fall; (died at eleven o'clock same night that accident occurred,)	37
Miner,	1	7	Killed by a fall of slate roof,	38
Miner,	1	5	Killed by a fall of top or rider coal,	39
Miner,	1	4	Killed by a fall of roof,	40
Miner,	1	10	Killed instantly by a fall of roof,	41
Laborer,			Killed instantly by a fall of roof,	42
Miner,	1	3	Killed instantly by a fall of coal,	43
Miner,	1	1	Killed by a fall of top coal,	44
Slate picker,			Killed by being crushed in pony roller-screens,	45
Laborer,	1	3	Seriously injured by a fall of roof; (died eleven hours after,)	46
Driver,			Injured by a car-wheel running on his leg, cutting a large flesh wound; leg was amputated September 5, then mortification set in, and he died on September 13,	47
Laborer,	1	4	Killed by being caught by a trip of cars on slope,	48
Driver,			Killed; he was taking his mule to the blacksmith-shop to get it shod, when a dog bit the mule; the mule started to run, and, as Daly was in the act of falling, his foot caught in the trace-chain; the mule dragged him along the road until he was dead; this ought not to be considered a mine accident, and ought not to be charged to the production and preparation of coal,	49

TABLE No. 1—

DATE.	No. killed.	Names.	Age.	Colliery where Accident Occurred.	Nationality.
26	50	John Flanegan, .	14	Coal Brook Mines, D. & H. C. Co., Fell township,	American, .
30	51	James Llewellyn,	17	Pyne Shaft, D. L. & W., Lackawanna township,	Welsh, . .
Oct. 11	52	Robert Bryden, .	30	Barnum Shaft, Penn'a C. Co., Marcy township,	American, .
14	53	Elmer Sweet, . .	21	Mt. Pleasant Slope, M. P. C. Co., H. P., Scranton,	American, .
19	54	Frank McGee, . .	45	Eaton Mines, J. S. & Co., Archbald borough, .	Irish, . .
19	55	William Andrews,	23	Sloan Shaft, D. L. & W., Lackawanna township,	Welsh, . .
21	56	John Healey, . . .	12	Marvine Shaft, D. & H. C. Co., Provid'ce, Scranton,	Irish, . .
24	57	Richard Angnim, .	18	Throop Shaft, J. Jermyn, Dickson City, ...	English, . .
30	58	John Moran, . . .	34	Sloan Shaft, D. L. & W., Lackawanna township,	Irish, . .
31	59	John Gumpe, . . .	. .	Stetler Shaft, S. S. & Co., Marcy township, . . .	Bavarian, .
Nov. 3	60	John James, . . .	18	Belmont Mines, B. C. Co., Carbondale, ...	Welsh, . .
16	61	Albert Williams, .	36	Grassy Island Shaft, D. & H. C. Co., Olyphant borough, ...	Welsh, . .
16	62	Thomas Williams,	22		Welsh, . .
20	63	Edward McNally,	14	Law Shaft, Penn'a C. Co., Pleasant Valley, . .	American, .
21	64	Thomas Hughes, .	54	Brisbin Shaft, D. L. & W., Providence, Scranton,	Welsh, . .
23	65	Hopkin Hughes, .	40	Oxford New Air Shaft, D. L. & W. R. R. Co., Hyde Park, Scranton, ...	Welsh, . .
23	66	Patrick Ratchford,	35		Irish, . . .
23	67	James Roberts, . .	33		Welsh, . .
25	68	Timothy Langan, .	60	Phœnix Mines, P. C. Co., Marcy township, . .	Irish, . . .
Dec. 1	69	John Brown, . .	40	Sloan Shaft, D. L. & W., Lackawanna township,	Irish, . . .
2	70	Thomas Williams,	35	Taylor Shaft, D. L. & W., Lackawanna township,	Welsh, . .
8	71	Charles Smith, . .	54	Greenwood Mines, P. A. C. Co., Lackawanna twp.,	English, . .
18	72	James Mulcahy, .	12	Fairmount Breaker, A. M. & Co., Pittston twp.,	American, .
21	73	Thomas Carey, . .	15	Bridge Breaker, B. C. Co., Hyde Park, Scranton,	American, .
22	74	Ferdinand Staub,	35	Pine Brook Shaft, L. I. & C. Co., Scranton, . .	German, . .
27	75	Stephen Hoodey, .	40	Stetler Shaft, S. N. S. & Co., Marcy township, .	Hungarian,

NOTE.—There were 75 deaths for year 1882.
Number of widows for year 1882, equal 43.
Number of orphans for year 1882, equal 133.
There were 105,631 tons of coal mined for each death.
There were 184 240 tons of coal mined for each widow.
There were 59,566 tons of coal mined for each orphan.

Continued.

Occupations.	Widows.	Orphans.	Nature or Cause of Death.	No. killed.
Driver,			Killed by being squeezed between a loaded mine car and pillar,	50
Driver,			Killed by being run over by loaded mine car in mines.	51
Mine boss,	1	2	Killed by a lever falling on his head; outside on rock dump,	52
Laborer,			Seriously injured by a fall of roof; died sixteen hours after,	53
Miner,	1		Seriously injured by a fall of roof; died same day,	54
Laborer,			Injured (reported not serious) by a fall of coal; died on Sunday, 22d,	55
Slate-picker,			Seriously injured; fell into screen while scuffling; died next morning,	56
Driver,			Killed instantly by falling down shaft,	57
Miner,			Burned by an explosion of fire-damp; died seven days after,	58
Miner,	1	3	Killed instantly by falling down the shaft,	59
Laborer,			Killed instantly by being caught between a trip of loaded cars and rib,	60
Miner,		2	These two men were killed instantly by a fall of rock roof,	61
Miner,	1	2		62
Report boy,			Seriously injured; caught between two cars outside; died next morning,	63
Timber man,	1	1	Killed by a stone rolling on him from side of gangway,	64
Miner,	1	5	Hughes and Ratchford were killed instantly, and Roberts died next day.	65
Miner,	1		This accident was caused by ice, which had accumulated close to top of	66
Miner,	1		shaft, falling, carrying a platform with it, crushing these men under it	67
Miner,	1		Killed by being caught by a fall of coal,	68
Laborer,	1	2	Killed instantly by a fall of top coal,	69
Laborer,	1	5	Seriously injured; a piece of rock fell, striking a pick Williams had in his hand; the handle of the pick struck his abdomen, injuring him internally; he died from the shock about two hours after. This is what the attending physician says,	70
Miner,	1	5	Seriously injured by a fall of roof; died about twelve hours after,	71
Screen-tender,			Seriously injured by being caught in cog-wheels in breaker; died a short time after,	72
Driver,			Seriously injured; caught between two large railroad cars at breaker; died a half hour after.	73
Miner,	1	2	Killed instantly; struck by flying coal from a blast; went back too soon,	74
Miner,	1	1	Killed instantly by a fall of roof,	75
	43	133		

There were fourteen deaths caused by falls of coal, equal	18.67	per cent.
There were twenty-four deaths caused by falls of roof, equal	32.00	do.
There were eight deaths caused by being crushed by mine cars, equal	10.66	do.
There were four deaths caused by being crushed by cars outside, equal	5.33	do.
There were four deaths caused by falling down shafts, equal	5.34	do.
There were four deaths caused by being caught by machinery, equal	5.33	do.
There were four deaths caused by sinking new shafts, equal	5.33	do.
There were three deaths caused by falling off mule and being dragged to death, equal	4.00	do.
There were three deaths caused by explosion of fire-damp, equal	4.00	do.
There were two deaths caused by explosion of powder, equal	2.67	do.
There was one death caused by coal falling down shaft on him, equal	1.33	do.
There was one death caused by heart disease—found dead in mine, equal	1.34	do.
There was one death caused by falling into a barrel of hot water, equal	1.33	do.
There was one death caused by lever striking him on the head, (outside,) equal	1.34	do.
There was one death caused by premature explosion of blast, equal	1.33	do.
	100.00	do.

TABLE No. 2.—*List of serious and non-fatal accidents reported to the Inspector now including all of Lackawanna and a portion of Wayne and Susquehanna coun ending 31st day of December, A. D. 1882.*

DATE.	No. injured.	Names.	Age.	Colliery where Accident occurred.	Nationality
Jan. 11	1	James Gilligan, . .	36	Erie Shaft, H. C. & I. Co., Glenwood borough, . .	Irish, . . .
18	2	Martin May, ...	50	Jermyn Shaft, No. 3, D. & H. C. Co. and D., L. & W., Scranton, ...	Irish, . . .
23	3	Henry Jones, . . .	26	Oxford Shaft, D., L. & W., Hyde Park, Scranton,	Welsh, .
23	4	Terrence Miles, . .	15	Barnum's Shaft, Pa. C. Co., Marcy township, .	American,
24	5	Michael Hoban, . .	40	No. 2. Diamond Shaft, E vein, D., L. & W., Hyde Park, Scranton, ...	Irish, . .
25	6	Michael Murray, . .	. .	No. 5 Shaft, Penn'a C. Co., Jenkins township,	American,
27	7	David J. Davis, .	19	Capouse Shaft, L., I. & C. Co., H. Park, Scranton,	Welsh, . .
31	8	Patrick Harding, .	42	No. 1 Tunnel, Penn'a C. Co., Pittston township, .	Irish, . . .
Feb. 27	9	Thomas Williams,	33	No. 1 Tunnel, Penn'a C. Co., Pittston township, .	Welsh, . .
27	10	James Dempsey, .	36	Eddy Creek Shaft, D. & H. C. Co., Olyphant boro.,	Irish, . .
27	11	Patrick Ginty, . .	35	Eddy Creek Shaft, D. & H. C. Co., Olyphant boro..	Irish, . .
28	12	William Lloyd, .	15	Eddy Creek Shaft, D. & H. C. Co., Olyphant boro.,	American,
Mar. 6	13	Michael Padden, .	57	No. 1 Shaft, D. & H. C Co., Cardondale city, .	Irish, . . .
7	14	Wm. McAndrews,	15	Capouse Shaft, L., I. & C. Co., H. Park, Scranton,	Irish, . .
7	15	Jacob Leppert, .	45	Butler Shaft, B. C. Co., Pittston township, .	German, .
27	16	Ter. McDermott, . .		Marvine Shaft, D. & H. C. Co., Providence, Scranton,	Irish, . .
28	17	Pat. McManamna,	52	Von Storch Breaker, D. & H. C. Co., Providence, Scranton, ...	Irish, . . .
29	18	Michael Lyden, .	40	Sibley Shaft, P. A. C. Co., Lackawanna township,	Irish, . . .
30	19	Llewellyn Davis, .	15	Taylor Shaft, D., L. & W., Lackawanna township,	Welsh, .
31	20	Andrew Coleman,	35	Brisbin Shaft, D., L. & W., Providence, Scranton,	English, .
April 3	21	Bernard King, .	.	Hillside Mines, H., C. & I. Co., Pleasant Valley. .	American,
13	22	Thomas Higgins, .	15	No. 1 Shaft Mines, D. & H. C. Co., Carbondale twp.,	American,
18	23	Edw. Dougherty, .	17	Gypsey Grove Colliery, Penn'a C. Co., Dunmore,	American,
25	24	T. McManniman, .	16	Seneca Slope, P. C. Co., Pittston borough, .	American,
May 3	25	Benj. Watkins, .	27	Bellevue Slope, D., L. & W., Lackawanna twp., .	Welsh, .
10	26	George Watkins, .	17	Hyde Park Shaft, D., L. & W., H. Park, Scranton,	Welsh, .
16	27	Jacob Grier, . .	55	Mt. Pleasant Mines, M. P. C. Co., H. P., Scranton,	German, .
19	28	John D. Davis, . .	14	Taylor Shaft, D., L. & W., Lackawanna township,	Welsh, .
19	29	Hugh Logan, . . .	19	No. 2 Diamond Shaft, G vein, D., L. & W., Hyde Park, Scranton, ...	Irish, . . .
23	30	John Whalen, . . .	14	Butler Shaft, B. C. Co., Pittston township,	American,
29	31	Henry Allen, . .	19	Capouse Shaft, L., I. & C Co., H. Park, Scranton,	Irish, . . .
June 8	32	Thomas Hares, . .	36	Tripp's Slope, D., L. & W., Hyde Park, Scranton,	Irish, .
10	33	John Halpin, . .	30	Sloam Shaft, D., L. & W., Lackawanna township,	Irish, . .
12	34	Louis Harris, . .	65	Von Storch Mines, D. & H. C. Co., Prov., Scranton,	Welsh, . .
26	35	Thomas Phillips, .	.	Belmont Mines, B. C. Co., Carbondale city, ...	Welsh, . .
July 1	36	Michael Collins, .	40	Phœnix Mines, S. & Co., Marcy township, ...	Irish, . . .
6	37	Lawrence Burke, .	50	No. 1 Shaft Mines, D. & H. C. Co., Carbondale twp.,	Irish, . .
8	38	William Lewis, . .	13	Archbald Colliery, D., L. & W., Lackawanna twp.,	Welsh, . .
10	39	Henry Bastron, . .	20	Mt. Pleasant Mines, M. P. C. Co., H. P., Scranton,	Welsh, .
12	40	Joseph White, . .	. .	Marvine Colliery, D. & H. C. Co., Prov., Scranton,	American,
13	41	Patrick Atkinson,	50	Erie Shaft, H., C. & I. Co., Glenwood borough,	Irish, . . .
18	42	Samuel B. James, .	40	Capouse Shaft, L., I. & C. Co., H. Park, Scranton,	Welsh, . .
19	43	James Golden, . .	16	Scranton C. Co. Mines, D., L. & W., Lacka. twp.,	Irish, . .
20	44	Thomas Morris, . .	40	Tripp Slope, D., L. & W., Hyde Park, Scranton, .	Irish, . .
25	45	John Shaffer, . .	15	Archbald Colliery, D., L. & W., Lackawanna twp.,	German, .
31	46	Anthony Dougher,	45	Legitt's Creek Mines, D., H. & C., Providence, Scranton, ...	Irish, .
Aug. 1	47	John Dunleavy, . .	16	Jermyn, No. 1, D. & H. C. Co., Jermyn borough,	American,
2	48	John Murphy, . .	40	Cayuga Mines, D., L. & W., Prov., Scranton, . .	Irish,
3	49	Michael Burke,	30	Meadow Brook Tunnel, W., C. & Co., Scranton, .	Irish, . .
3	50	James Highland, .	22	No. 1 Shaft Mines, D. & H. C. Co., Carbondale twp.	American,
14	51	William Durkin, .	11	Hampton Mines, D., L. & W., Lackawanna twp.,	Irish, . . .
19	52	Anthony Omalla,	42	Slope No. 4, Penn'a C. Co., Jenkins township, .	Irish, . . .
29	53	Michael Burk, . . .	50	Jermyn, No. 3, D., L. & W. and D. & H. C. Co., Scranton, ...	Irish, . .
29	54	William Loughrey,	28	No. 6 Shaft, Penn'a C. Co., Jenkins township, .	American,
14	55	John Cafferty, .	34	No. 2 Shaft, E vein, Diamond mines, D., L. & W., Hyde Park, Scranton, ...	Irish, . . .
21	56	Edward Madden, .	28	Brisbin Shaft, D., L. & W., Providence, Scranton,	Irish, . . .
23	57	Edward Murphy, .	58	Central Shaft, D., L. & W., Hyde Park, Scranton,	Irish, . . .
23	58	Charles Ready, . .	11	Marvine Shaft, D. & H. C. Co., Prov., Scranton,	Irish, . . .
30	59	John Logan, . . .	32	Jermyn, No. 3, Shaft, D. & H. C. Co. and D., L. & W., Scranton, ...	American,
Oct. 6	60	Patrick McCalpin,	40	Dodge Shaft, D., L. & W., RR. Co., Lackawanna twp.	Irish, . . .

of the Eastern District of the Wyoming Coal Fields, Luzerne and Carbon counties, ties, State of Pennsylvania, and the cause as shown by his investigations, for the year

Occupation.	Nature of Accident.	No. injured.
Miner,	Leg fractured by a car getting off the track and striking his leg as he was pushing it,	1
Assist. mason,	Ribs and collar bone fractured by being run over by empty mine car,	2
Sinker,	One arm blown off and otherwise injured by a cartridge of giant powder exploding when cleaning out hole,	3
Driver,	Leg fractured below the knee by being caught between stretcher and car,	4
Miner,	Leg fractured by a fall of top coal,	5
Driver,	Leg fractured by a loaded car running upon it,	6
Driver,	Leg fractured by being hit by a loaded mine car,	7
Miner,	Seriously injured by premature explosion of a blast,	8
Miner,	Seriously injured by a fall of roof,	9
Miner,	Both these men were seriously injured by premature explosion of a blast,	10
Miner,		11
Driver,	Seriously injured; collar bone fractured by being squeezed between a car and pillar,	12
Miner,	Leg fractured by a fall of roof; died on night of 22d,	13
Driver,	Seriously injured by falling under a culm car on culm dump,	14
Footman,	Collar bone broken by being caught between two cars at foot of shaft,	15
Miner,	Shoulder fractured by a collar (stick of timber) falling on it,	16
Ashman,	Collar bone fractured by being hit by sheet-iron stack falling on him,	17
Miner,	Two fingers cut off by a fall of top coal,	18
Driver helper,	Leg fractured by being hit by a car while unhitching his mule,	19
Miner,	Right leg fractured between knee and hip by a fall of top coal,	20
Driver,	Leg fractured by a runaway trip of cars in mines,	21
Driver,	Arm fractured between wrist and elbow; was pushing a car when another run against him,	22
Driver,	Arm fractured by being caught between top rail of loaded mine car and roof,	23
Outside driver,	Leg fractured by being caught between stretcher and car, (outside,)	24
Miner,	Left arm fractured by a fall of middle rock,	25
Driver,	Leg fractured by falling in front of empty car in mines,	26
Miner,	Leg fractured by a piece of coal falling on him when in the act of sounding it,	27
Driver helper,	Left leg fractured by a fall of roof,	28
Footman,	Leg fractured by being caught between side of shaft and car,	29
Driver,	Collar bone fractured by a runaway car,	30
Comp'y laborer,	Arm fractured and afterwards amputated by being run over by a trip of cars,	31
Miner,	Right leg fractured by a fall of coal,	32
Miner,	Seriously injured by a fall of roof,	33
Miner,	Right leg fractured by a fall of roof,	34
Miner,	Seriously injured by an explosion of powder; a spark fell into a keg he was hiding,	35
Miner,	Arm fractured by premature explosion of a blast,	36
Miner,	Left arm fractured between hand and elbow by a fall of top coal,	37
Slate-boy,	Arm fractured by falling down while playing around the breaker,	38
Runner,	Leg fractured by being run over by cars in mines,	39
Loader,	Arm fractured by striking it against a large railroad car on track going to the breaker,	40
Miner,	Leg fractured by coal flying from a blast,	41
Miner,	Leg fractured by a fall of top coal,	42
Driver,	Arm fractured by falling under culm car on dump,	43
Propman,	Left leg fractured; caught between car and gate in mines,	44
Culm driver,	Arm fractured by being thrown off a mule,	45
Miner,	Leg fractured by a fall of coal,	46
Slope headman,	Left leg fractured by being hit with wire rope; working on slope in mines,	47
Laborer,	Left leg crushed and amputated; he fell under a large railroad car at breaker,	48
Miner,	Leg fractured at ankle by a fall of roof,	49
Miner,	Leg fractured by a fall of roof,	50
Slate-picker,	Arm fractured by falling off timbers; he was climbing in the breaker,	51
Miner,	Collar bone fractured by a fall of roof,	52
Miner,	Left leg fractured by a fall of roof,	53
Miner,	Four ribs fractured and otherwise injured by a fall of black rock,	54
Miner,	Leg fractured between knee and hip by a fall of roof,	55
Miner,	Injured in back and small bone above ankle; fractured by a fall of rock,	56
Miner,	Shoulder blade fractured by a fall of coal and rock,	57
Driver,	Instep of left foot and big toe fractured by wheel of mine car passing over it,	58
Miner,	Small bone of right leg fractured below knee by being caught between mine cars,	59
Miner,	Left leg fractured between ankle and knee by a fall of top coal,	60

TABLE No. 2—

DATE.	No injured.	Names.	Age.	Colliery where Accident Occurred.	Nationality
Oct. 9	61	William Jenkins, .	50	Jermyn, No. 1, D. & H. C. Co., Jermyn borough,	Welsh, . .
9	62	William Williams,	54	Central Shaft, D., L. & W., Hyde Park, Scranton,	English, .
12	63	Herbert Noble, . .	30	Green Ridge Slope, O. S. J. & Co., Dunmore, . .	Welsh,
14	64	Frank Morahan, .	15	Roaring Brook Shaft, Spencer's, Dunmore, . . .	American,
17	65	Sanford McConnell	18	Elk Hill Mines, E. H. I. & C. Co., Dickson city, .	American,
18	66	Peter Connelly,	18	Meadow Brook Shaft, W. C. & Co., Scranton, .	Irish, . .
19	67	Anthony O'Malia,		Pierce Mines, P. C. Co., Archbald borough, . .	Irish, . . .
24	68	Richard Drown, .	42	Ligitt's Creek Shaft, D. & H. C. Co., Providence, Scranton, ...	English, .
26	69	Gomer Griffith, . .	12	Taylor Mines, D., L. & W., Lackawanna twp., . .	American,
31	70	Ed. Grossman, . .	22	Tripp's Slope, D., L. & W., H. Park, Scranton, .	German, .
Nov. 4	71	George Daley,	14	No. 9 Shaft, Penn'a Coal Co , Hughestown bor., .	American,
13	72	Martin Newcomb,	29	Brisbin Shaft, D., L & W., Providence, Scranton,	Irish, . .
14	73	Edward Carey, . .	22	Brisbin Shaft, D., L. & W., Providence, Scranton,	Irish, . . .
15	74	Richard Willis, .	22	Bridge Mines, B. C. Co., H. Park, Scranton, . .	Irish, . . .
15	75	John Walsh, . .	18	No. 2, Diamond Breaker, D., L. & W., H. Park, Scranton, ...	American,
16	76	Sylvester Willliams	38	Grassy Island Shaft, D. & H. C. Co., Olyphant, .	Welsh,
18	77	John Mayberry, . .	16	Hampton Shaft, D., L. & W., H. Park, Scranton,	American,
21	78	Patrick O'Hora, .	56	Gypsey Grove Shaft, P. C. Co., Dunmore borough,	Irish, . .
23	79	Thomas Watkins, .	40	Oxford New Shaft, D., L. & W., H. Park, Scranton,	Welsh,
Dec. 5	80	Thomas Wade, . .	6½	Fair Lawn Slope, F. L. C. Co., Scranton, ...	American,
6	81	Neal Mulhearne, .	33	No. 2 Shaft, G. vein, D., L. & W., H. P., Scranton,	Irish, . . .
6	82	Bernard Murray, .	14	Hampton Shaft, D., L. & W., H. Park, Scranton,	American,
6	83	George Vickers, .	14	Jermyn, No. 3, Shaft, D. & H. C. Co., and D., L. & W., Scranton, ...	English, .
9	84	Thomas McCabe, .	17	Shaft No. 4, Penn'a C. Co., Jenkins township, . .	American,
21	85	Albert Stephens, .	15	Marvine shaft, D. & H. C. Co., Providence, Scranton,	American,
27	86	Richard Haggerty,		Pancoast Mines, P. C. Co., Dickson city, ...	Irish, . .
27	87	Michael Connors, .	36	No. 4 Slope, Penn'a C. Co., Jenkins township, . .	Irish, . . .
28	88	Richard Leyden, .	17	Meadow Brook Shaft, W. C. & Co., Scranton, . .	Irish, . . .

Continued.

Occupation.	Nature of Accident.	No injured.
Miner,	Left leg fractured and otherwise injured by a fall of roof,	61
Miner,	Two ribs fractured by a fall of rock,	62
Miner,	Leg fractured by being caught by a car,	63
Slate picker,	Right arm fractured by being caught by journal of screen,	64
Driver,	Collar bone broken by a fall of roof,	65
Runner,	Jaw bone fractured by being squeezed between mule and mine car,	66
Miner,	Arm fractured by being hit by a piece of coal flying from a blast,	67
Miner,	Leg fractured by a fall of top coal,	68
Door boy,	Both legs fractured by being caught by cars in mines,	69
Platemau,	Leg fractured by being kicked by a mule, which knocked him down a trestle fifteen feet high,	70
Driver,	Leg fractured by a car running over it in the mines,	71
Laborer,	Seriously injured by a fall of rock,	72
Laborer,	Leg fractured by being caught by a car outside,	73
Laborer,	Left leg fractured by being hit by a piece of coal flying from a blast,	74
Driver,	Arm fractured by falling on it while scuffling with other boys,	75
Laborer,	Seriously injured about the body by a fall of rock roof,	76
Driver,	Left leg fractured by the wheel of a car running over it,	77
Laborer,	Shoulder-blade fractured by being caught between a car and prop,	78
Miner,	Seriously injured by a fall of ice and platform down the shaft,	79
School boy,	Left arm fractured, afterwards amputated, by being run over by a car on his way from school,	80
Miner,	Spinal cord injured by a fall of roof,	81
Driver,	Right arm fractured by being caught between car and stretcher,	82
Driver,	Leg fractured by a mine door falling on him,	83
Driver,	Arm fractured by being caught between cars,	84
Driver,	Left leg fractured between knee and hip by mine car running on to it,	85
Miner,	Leg fractured below the knee; while in the act of barring down top coal it fell on him,	86
Laborer,	Arm fractured by a piece of coal sliding on it; was working on a steep pitch,	87
Foot man,	Arm fractured by a runaway car on slope,	88

There were 88 persons seriously injured.

Legs fractured by falls of coal,	10
Legs fractured by falls of roof,	8
Legs fractured by mine cars, (inside,)	16
Legs fractured by mine cars, (outside,)	3
Legs fractured by blasts,	2
Legs fractured from miscellaneous causes,	3
	42
Arms fractured by falls of coal,	2
Arms fractured by falls of roof,	1
Arms fractured by mine cars, (inside,)	5
Arms fractured by mine cars, (outside,)	3
Arms fractured, caught in machinery,	3
Arms fractured from miscellaneous causes,	6
	20
Otherwise injured by falls of coal,	2
Otherwise injured by falls of roof,	10
Otherwise injured by mine cars,	6
Otherwise injured by explosion of powder,	4
Otherwise injured from miscellaneous causes,	4
	26

TABLE No. 3.—*List of slight accidents reported to the Inspector of the Eastern all of Lackawanna, and a portion of Wayne and Susquehanna counties, State of 31st day of De-*

DATE	No. of accident.	Names.	Age	Colliery where Accident Occurred.	Nationality
Jan. 3	1	Patrick Dougher, .	50	Seneca Slope, P. C. Co., Pittston borough, ...	Irish, . . .
4	2	Thos. Delaney,	40	N. 6 Shaft, P. C. Co., Jenkins township, .	Irish, . . .
6	3	P. J. Cunningham,	14	Von Storch Mines, D. & H. C. Co., Prov'ce, Scranton,	Irish, . . .
12	4	Michael Fadden, . .	45	Olyphant No. 2, D. & H. C. Co., Olyphant bor., . .	Irish, . . .
12	5	Thos. M. Griffiths,	38	Jermyn No. 1. D. & H. C. Co., Jermyn bor., . . .	Welsh, . .
18	6	Patrick Judge, . .	16	Archbald Shaft, D. L. & W., Lackawanna twp., .	Irish, . .
23	7	John Poff, ...	28	Oxford Shaft, D. L. & W., Hyde Park, Scranton, .	German, .
28	8	Thomas G. Watkins	36	Hampton Shaft, D. L. & W., Lackawanna twp., .	Welsh, . .
31	9	Wm. E. Williams,	10	Capouse Breaker, L. I. & C. Co., H. P., Scranton,	Welsh, . .
Feb. 3	10	John Maloney, .	15	Taylor Shaft, D. L. & W., Lackawanna twp.,	Irish, . .
6	11	Martin Dougherty,	35	Fair Lawn Slope, F. L. C. Co., Scranton City, . .	Irish, . . .
8	12	John Handley, .	45	No. 1 Shaft, D. & H. C. Co., Carbondale City, .	Irish, . . .
9	13	Daniel Morgan,	15	Erie Shaft, H. C. & I. Co., Glenwood bor., ...	American,
9	14	James Walker, . .	13	Green Ridge Slope, G. R. C. Co., Dunmore, . . .	Irish, . . .
15	15	Thomas Davis, .	30	Brisbin Shaft, D. L. & W., Providence, Scranton, .	Welsh, . .
18	16	Griffith G. Thomas,	30	Capouse Shaft, L. I. & C. Co., H. Park, Scranton,	Welsh, . .
18	17	Michael Wald, .	29	Capouse Shaft, L. I. & C. Co., H. Park, Scranton,	Irish, . . .
18	18	Cornelius Donohoe	16	Bridge Mines, B. C. Co., Hyde Park, Scranton, . .	Irish, . . .
21	19	Pat'k Cunningham	50	Law Shaft, Penn'a C. Co., Pleasant Valley, . .	Irish, . . .
Mar. 1	20	Auth'y O'Donnell,	50	Lucas Shaft, T. Lucas & Co., Providence, Scranton,	Irish, . .
1	21	Ed. McTurney, . .	10	Sloan Shaft, D. L. & W., Lackawanna twp.,	Irish, . .
2	22	Patrick Ruane,	50	Jermyn Shaft, D. L. & W. & D. & H. C. Co., Scranton,	Irish, . . .
4	23	James McGarry, . .	14	Tripp Slope, D. L. & W., Hyde Park, Scranton,	Irish, . . .
6	24	John B. Hunt, .	35	Eaton Mines, Jones S. & Co., Archbald borough, .	American,
7	25	Patrick Mangen, .	45	Greenwood Mines, N. A. C. Co., Lackawanna twp.,	Irish, .
7	26	George Allen, .	40	Mt. Pleasant Mines, M. P. C. Co., H. P., Scranton,	English, .
8	27	Thos. Cavanagh, . .	33	Mt. Pleasant Mines, M. P. C. Co., H. P., Scranton,	Irish, . .
10	28	Joseph Davis, . . .	14	Capouse Shaft, L. I. & C. Co., H. Park, Scranton,	Welsh, . .
10	29	Thomas Owens,	15	Hyde Park Shaft, D. L. & W., H. Park, Scranton,	Welsh, . .
10	30	John Hopkins, .	35	Hyde Park Shaft, D. L. & W., H. Park, Scranton,	Irish, . . .
10	31	George Bradley, . .	47	Seneca Slope, P. C. Co., Pittston borough,	Welsh, . .
14	32	William Clark, .	17	Central Shaft, D. L. & W., Hyde Park, Scranton,	Irish,
14	33	P. J. Corcoran, . .	22	Eaton Mines, Jones S. & Co., Archbald borough, .	American,
16	34	Thomas Evens, . .	62	Brisbin Shaft, D. L. & W., Providence, Scranton,	Welsh, . .
21	35	John Thomas, . .	35	Spring Brook Mines, H. C. & I. Co., Lackawanna twp	Welsh, . .
21	36	Peter Murphy, .	21	Twin Shaft, P. C. Co., Pittston borough, .	Irish, . .
22	37	John O'Davis,	47	Continental Shaft, D. L. & W., Lackawanna twp.,	Welsh, . .
22	38	Dennis McCarthy,	42	Continental Shaft, D. L. & W., Lackawanna twp.,	Irish, . .
22	39	John Farrell, . .	48	Green Ridge Slope, G. R. C. Co., Dunmore bor., .	Irish, . . .
April 1	40	Henry Reese, . . .	46	Von Storch Mines, D. & H. C. Co., Prov'ce, Scranton,	Welsh, . .
1	41	James Delaney, . .	53	Shaft No. 10, Penn'a C. Co., Hughestown bor.,	Irish, . .
6	42	Geo. Keshpaugh, .	24	Twin Shaft, Penn'a C. Co., Pittston borough, . .	Polish, . .
12	43	Abr'am Polhamus,	55	Slope No. 4, Penn'a C. Co., Jenkins township, . .	American,
12	44	Isaac Hinchcliff, .	30	Phœnix Mines, S. & Co., Marcy township, . .	American,
12	45	Patrick Farrell, . .	13	Coal Brook Mines, D. & H. C. Co., Carbondale, . .	American,
14	46	Charles Roberts, .	47	Archbald Shaft, D. L. & W., Lackawanna twp., . .	English, .
14	47	Michael McGreal, .	30	Green Ridge Slope, G. R. C. Co., Dunmore bor.,	Irish, .
15	48	Benj. Neagley, .	17	Capouse Shaft, L. I. & C. Co., H. Park, Scranton,	German, .
17	49	William Jones, . .	15	Capouse Shaft, L. I. & C. Co., H. Park, Scranton,	Welsh, .
18	50	William Kelly,	20	Mosier Shaft, B. C. Co., Hughestown bor., . .	American,
18	51	Alexander Zeigler,	20	Mosier Shaft, B. C. Co., Hughestown bor., . . .	American,
18	52	Anthony Barrett, .	14	Spring Brook Mines, H. C. & I. Co., Lackawanna twp	Irish, . .
26	53	Joseph Smiles, . .	16	No. 10 Shaft, Penn'a C. Co., Hughestown bor., . .	American,
May 1	54	David Jones, . .	35	Fairmount Shaft, A. M. & Co., Pittston twp.,	Welsh, . .
2	55	Henry Myers, . . .	45	Capouse shaft, L. I. & C. Co., H. Park, Scranton,	German, .
3	56	James Mullen, . .	14	Bellevue Slope, D. L. & W., Lackawanna twp.,	Irish, . .
8	57	David Lewis, . . .	30	Grassy Island Air-shaft, D. & H. C. Co., Olyphant,	American,
8	58	John Hanahoe, . .	42	No. 5 Shaft, Penn'a C. Co., Jenkins township, .	Irish, . .
9	59	Richard Norton, . .	16	Central Shaft, D. L. & W., Hyde Park, Scranton,	Irish, . .
10	60	Thomas Gildea, . .	35	White Oak Mines, D. & H. C. Co., Archbald bor., .	Irish, . . .
12	61	Frank Williams, .		Grassy Island Shaft, D. & H. C. Co., Olyphant, .	. . . .
15	62	John Moran, . .	15	Brisbin Shaft, D. L. & W., Providence, Scranton,	Irish, . . .
15	63	Thomas Fleming, .	12	Eaton Mines, Jones S. & Co., Archbald, ...	American,
15	64	James Harris,	36	Butler Mines, B. C. Co., Pittston township, . . .	Welsh, . .
16	65	Martin Ford, ...	40	No. 9 Shaft, Penn'a C. Co., Hughestown bor., .	Irish, . .
17	66	Michael Reap, . . .	35	Von Storch Mines, D. & H. C. Co., Prov'ce, Scranton,	Irish, . . .
18	67	T. F. Peters, ...	65	No. 2 Shaft, G Vein Diamond Mines, D. L. & W., Hyde Park, Scranton, . . .	Welsh, . .
19	68	Richard J. Davis, .	16	Taylor Shaft, D. L. & W., Lackawanna township,	Welsh, . .

District of the Wyoming coal fields, Luzerne and Carbon counties, now including Pennsylvania, and the cause as shown by his investigations, for the year ending cember, A. D. 1882:

Occupation.	Nature or Cause of Accident.	No. of accident.
Miner,	Slightly injured by a fall of blacksmith coal,	1
Laborer,	Slightly injured by a car jumping off the track,	2
Driver,	Slightly injured by a piece of rock falling on his arm,	3
Miner,	Slightly injured by a fall of coal,	4
Miner,	Slightly injured; scalded by steam,	5
Driver's helper,	Index finger fractured, caught between car and rib,	6
Sinker,	Slightly injured by a cartridge of giant powder exploding while cleaning out a hole,	7
Miner,	Slightly injured by a fall of roof,	8
Slate picker,	Was caught by cog-wheel in breaker; no bones broken; injured slightly,	9
Driver,	Slightly injured; caught between the rail and stretcher attached to mule,	10
Miner,	Slightly burned by explosion of fire-damp,	11
Miner,	Slightly injured by fall of roof,	12
Driver,	Slightly injured; kicked by mule,	13
Gate tender,	Slightly injured; jammed between a car, and door or gate he was attending,	14
Miner,	Found speechless in his chamber; supposed to be a paralytic stroke,	15
Miner,	Both these men were slightly hurt by a fall of bony coal,	16
Laborer,		17
Footman,	Slightly injured; hand caught between cars while coupling them,	18
Miner,	Slightly injured by a fall of roof,	19
Rockman,	Slightly injured; caught by hoisting bucket while sinking air-shaft,	20
Slate-boy,	Slightly cut on leg; caught between bumpers of cars on siding at breaker,	21
Miner,	Slightly injured by premature explosion of blast,	22
Driver's helper,	Slightly injured; kicked by a mule, knocking him under a car,	23
Water bailer,	Slightly injured; caught between top rail of loaded mine car and roof,	24
Trackman,	Slightly injured; caught between the car and pillar,	25
Miner,	Small bone in leg fractured close to the ankle by a fall of bony coal,	26
Miner,	Small bone in leg fractured close to the ankle by a fall of bony coal,	27
Driver,	Slightly injured; caught between the car and rib,	28
Driver,	Slightly injured; fell under car while unhitching his mule,	29
Miner,	Slightly injured; sprained his ankle mining out piece of coal,	30
Fire boss,	Slightly injured; hit on the head by a piece of top coal,	31
Runner,	Slightly injured; fell under car while unhitching his mule,	32
Driver,	Slightly injured; caught between two cars,	33
Miner,	Slightly injured by a fall of roof,	34
Miner,	Slightly injured by a fall of top coal,	35
Miner,	Slightly injured by a car falling on him, being capsized by coal from a blast,	36
Miner,	Both slightly injured by a fall of bony coal and roof,	37
Laborer,		38
Miner,	Slightly injured by premature explosion of a blast,	39
Miner,	Slightly injured by hoisting carriage in shaft,	40
Miner,	Slightly injured by a fall of rider coal,	41
Miner,	Slightly injured by piece of coal from a blast,	42
Miner,	Slightly injured by piece of coal from a blast	43
Sinker,	By engineer's carelessness rope broke, letting hoisting bucket fall down the shaft, slightly injuring him,	44
Door-boy,	Slightly injured by a piece of coal falling on him from a passing mine car,	45
Laborer,	Slightly injured by fall of roof; severe cuts, no bones broken,	46
Miner,	Slightly injured by piece of coal from a blast,	47
		48
Driver,	Slightly injured by a runaway car; caught between car and head-block,	49
Laborer,	Slightly injured by fall of roof,	50
Laborer,	Slightly injured by fall of roof,	51
Driver,	Slightly injured by being run on by cars, (outside, foot of culm plane,)	52
Driver,	Severely cut in the face; caught under car between it and rail,	53
Miner,	Injured by fall of roof and top coal,	54
Miner,	Injured by fall of bony coal and roof,	55
Driver,	Arms slightly injured by falling in front of car,	56
Sinker,	Slighly injured; break-band of hoisting gin broke, letting him down the air-shaft a distance of thirty feet,	57
Miner,	Slightly injured by fall of bony and rider coal and roof,	58
Driver,	Slightly injured; caught by hook of hames on mule's harness,	59
Miner,	Slighly injured being caught by loaded car in mines,	60
	Slightly injured by falling off trestle works, (outside,)	61
Driver,	Slightly injured by culm car running on him,	62
Door-boy,	Slightly injured; caught by passing car in mines,	63
Miner,	Slightly injured by fall of rock while standing a prop,	64
Laborer,	Slightly injured by fall of slate,	65
Miner,	Injured by fall of roof,	66
Miner,	Slightly injured by fall of top coal,	67
Driver,	Slightly injured by being caught between mule and car,	68

TABLE No. 3.—

DATE	No. of accident.	Names.	Age.	Colliery where Accident Occurred.	Nationality
May 20	69	Jacob J. Jones, . .	35	Scranton C. Co., D. L. & W., Lackawanna twp., .	Welsh, . .
20	70	James Feeney, . .	24	Scranton C. Co., D. L. & W., Lackawanna twp., .	Irish, . . .
22	71	Roger Leonard, . .		Marvine Shaft, D. & H. C. Co., Provid'ce, Scranton,	Irish, . . .
24	72	John Cain, . . .	35	Meadow Brook Shaft, W. C. & Co., Scranton,	Irish, . . .
24	73	Thomas Kearns, .	16	Fair Lawn Slope, F. L. C. Co., Scranton, . .	Irish, . . .
29	74	Michael Gavin, . .	47	Archbald Mines, D. L. & W., Lackawanna twp., .	Irish, . . .
30	75	Patrick Corby, . .	50	No. 2 Shaft, Rock vein, Diamond Mines, D. L. & W., Hyde Park, Scranton, .	Irish, . . .
31	76	Jacob Winsline, . .	28	Dodge Shaft, D. L. & W., Lackawanna township,	Polish, . .
June 1	77	Martin Walsh, . .		Filer's Shaft, F. & L., Winton borough, . . .	Irish, . .
1	78	John Barrett, . .	17	Mosier Colliery, B. C. Co., Hughestown borough,	American,
3	79	Thomas Rafferty, .	40	Pine Brook Shaft, L. I. & C. Co., Scranton, . . .	Irish, .
5	80	Francis Mullen, . .	15	Greenwood Colliery, P. A. C. Co., Lackawanna twp.,	American,
6	81	Martin Hunt, .	40	Tripp Slope, D. L. & W., Hyde Park, Scranton,	Irish, . .
6	82	David Robertson, .	45	No. 2 Slope, Penn'a C. Co., Jenkins township,	Scotch, . .
7	83	James O'Boyle, . .	44	Slope No. 6, Penn'a C. Co., Hughestown borough,	Irish, . . .
9	84	Patrick Corcoran,	45	Sibley Shaft, P. A. C. Co., Lackawanna township,	Irish, .
10	85	Thomas Litts, .	30	Lucas Shaft, Thomas Lucas & Co., Scranton, . .	English, .
10	86	George Andrews, .	40	Twin Shaft, P. C. Co., Pittston borough, . . .	German, .
12	87	William Germon, .	62	Continental Shaft, D. L. & W., Lackawanna twp.,	Welsh, .
12	88	Joseph Clarke, . .	14	Shaft No. 4, Penn'a C. Co., Jenkins township,	American,
12	89	Levi Emanuel, . .	24	Barnum Shaft, Penn'a C. Co., Marcy township, .	. .
13	90	Reese Llewellen, .	14	Bellevue Shaft, D. L. & W., Lackawanna twp., .	Welsh, .
16	91	Anthony McGuffie,	38	Shaft No. 7, Penn'a C. Co., Jenkins township,	Scotch, . .
17	92	Richard Jones,	42	Bellevue Slope, D. L. & W. R. R. Co., Lackawanna tp.	Welsh, . .
17	93	Henry Cook, . .	20	Erie shaft, H. C. & I. Co., Glenwood borough,	Irish, . . .
19	94	John Whilby, . . .		Grassy Island Shaft, D. & H. C. Co., Olyphant, . .	. . .
20	95	James Powell, . .	44	National Shaft, W. C. & Co., Lackawanna twp., .	Welsh, . .
22	96	William Walsh, .	10	Archbald Shaft D. L. & W., Lackawanna twp., .	Irish, . .
22	97	William Phillips, .	17	Von Storch Mines, D. & H. C. Co., Provid'ce, Scranton	Welsh, . .
22	98	Thomas Rowland,	38	Sibley Mines, P. A. C. Co., Old Forge township, .	Welsh, . .
23	99	James Callahan, .	13	Mount Pleasant, M. P. C. Co., H. Park, Scranton,	Irish, . .
23	100	John Bull, . .	14	Mount Pleasant, M. P. C. Co., H. Park, Scranton,	German, . .
27	101	Henry Prothoro, .	42	Cayuga Shaft, D. L. & W., Providence, Scranton,	Welsh, .
27	102	John Carroll, . .	40	White Oak Mines, D. & H. C. Co., Archbald, .	American,
27	103	James Flynn, . .	14	White Oak Mines, D. & H. C. Co., Archbald,	American,
27	104	George Efferson, .	14	Fairmount Mines, A. M. & Co., Pittstown twp., .	American,
28	105	James Dunn, . .	36	Bellevue Shaft, D. L. & W., Lackawanna township,	Irish, . .
29	106	Patrick Moran, . .	50	White Oak Mines, D. & H. C. Co., Archbald, .	Irish, . .
29	107	John E. Williams,	50	Capouse Shaft, L. I. & C. Co., H. Park, Scranton,	Welsh, . .
29	108	Dennis Slavin, . .	13	Bridge Mines, B. C. Co., Hyde Park, Scranton, . .	American,
30	109	William Herbert, .	45	Spring Brook Mines, H. C. & I. Co., Lackawanna twp.	Welsh, . .
July 3	110	Anthony Duffy, .	30	Legitt's Creek Shaft, D. & H. C. Co., Prov., Scranton,	Irish, . .
6	111	John Kotzwinkle,	56	Dodge Shaft, D. L. & W., Lackawanna township,	German, .
6	112	Evan Evans, . . .	16	No. 9 Shaft, Penn'a C. Co., Pittston borough, . .	American,
8	113	Martin Noon,	13	White Oak Mines, D. & H. C. Co., Archbald, . .	American,
10	114	James Cummings,	14	Central Shaft, D. L. & W., Hyde Park, Scranton,	American,
10	115	Michael McDonald,	40	Twin Shaft, P. C. Co., Pittston borough, . . .	Irish, . . .
10	116	John Moran,		No. 10 Shaft, Penn'a C. Co., Hughestown borough,	Irish, . . .
11	117	William Owens, . .	45	Jermyn No. 3, D. & H. C. Co., & D. L. & W., Scranton,	Welsh, . .
12	118	William Loftus, .	15	Fair Lawn Slope, F. L. C. Co., Limited, Scranton,	American,
12	119	David Jones, . .	15	Jermyn, No. 2, Slope, D. & H. C. Co., Jermyn bor.,	American,
13	120	James Hart, ...	24	Phœnix Shaft, P. C. Co., Marcy township, . .	Irish.
13	121	John Corbet, . .	10	Sibley Shaft, P. A. C. Co., Old Forge township, .	American,
13	122	John Ludden, . .	17	Greenwood Mines, P. A. C. Co., Lackawanna twp.,	American,
15	123	John Welsh, ...	38	Bellevue Shaft, D. L. & W., Lackawanna twp., .	Irish, . . .
15	124	Thomas Dunn, .	14	Law Shaft, Penn'a C. Co., Pleasant Valley bor., .	American,
17	125	Peter Robertson, .	40	No. 2 Slope, Penn'a C. Co., Jenkins township, .	Scotch, . .
18	126	Michael Murray, .	22	National Mines, W. C. & Co., Lackawanna twp., .	Irish, . . .
20	127	Patrick Hart, .	52	Central Shaft, D. L. & W., Hyde Park, Scranton,	Irish, . . .
20	128	Jerry Deysman, . .	38	Central Shaft, D. L. & W., Hyde Park, Scranton,	Irish, .
22	129	Patrick Donnelly,	38	Erie Shaft, H. C. & I. Co., Greenwood borough, .	Irish, . .
22	130	Frank Heston, . .	21	No. 7 Shaft, Penn'a C. Co., Jenkins township,	American,
22	131	George Doyle, . .	42	Twin Shaft, P. C. Co., Pittston borough,	Irish, .
26	132	William Palmer, .	16	Green Ridge Slope, G. R. C. Co., Dunmore bor., .	Irish, . .
26	133	John Harris, . . .	40	Twin Shaft, P. C. Co., Pittston borough,	Welsh, . .
26	134	James Higgins, . .	20	Everhart Mines, T. W. & Co., Jenkins township, .	Irish, . .
26	135	Thomas Jenkins, .	43	Sloan Shaft, D. L. & W., Lackawanna township, .	Welsh, . .
26	136	John Narey, . .	15	Marvine Shaft, D. & H. C. Co., Provid'ce, Scranton,	Irish, . . .
27	137	Frank Carroll, . .	16	Fair Lawn Slope, F. L. C. Co., Limited, Scranton,	Irish, . . .
27	138	John Lewis, ...	41	Hampton Shaft, D. L. & W., Lackawanna twp., . .	Welsh, . .

Continued.

Occupation.	Nature or Cause of Accident.	No. of accident.
Miner,	Both men worked together, and were slightly burned by an explosion of gas,	69
Miner,		70
Miner,	Hand slightly injured; crushed between car and prop,	71
Miner,	Head injured by a fall of bony coal,	72
Helper,	Foot slightly injured by a drag falling on it,	73
Miner,	Slightly injured by a premature blast,	74
Miner,	Slightly injured by a fall of coal,	75
Laborer,	Slightly injured by a fall of roof,	76
Miner,	Slightly injured by a piece of top coal falling on him,	77
Culm driver,	Finger cut off; caught between car and prop,	78
Miner,	Slightly burned by an explosion of fire-damp,	79
Driver,	Slightly injured by being kicked by a mule,	80
Laborer,	Slightly injured by being hit on the head by a piece of falling roof,	81
Miner,	Slightly injured by a premature explosion of a blast,	82
Miner,	Hand slightly injured by a fall of coal,	83
Miner,	Slightly burned by an explosion of a cartridge,	84
Sinker,	Slightly injured by falling off platform in shaft, ten feet from bottom,	85
Miner,	Slightly injured by premature explosion of a blast,	86
Miner,	Slightly injured by being knocked down by a trip of cars in mines,	87
Driver,	Slightly burned by kerosine oil setting fire to his clothing,	88
Miner,	Slightly injured by a fall of black rock,	89
Driver,	Slightly injured by being caught between car and door in mines,	90
Miner,	Slightly injured by a fall of top coal,	91
Miner,	Slightly injured by a fall of coal,	92
Outside laborer,	Finger cut off by being caught between two cars outside,	93
Miner,	Leg slightly hurt by a fall of top coal,	94
Boss sinker,	Injured by falling down the shaft, twenty-two feet from platform to bottom,	95
Slate boy,	Hand injured by being caught in turn-table outside while playing around,	96
Runner,	Slightly injured by car running over and mashing big toe,	97
Laborer,	Slightly injured by a piece of coal sliding off the top coal on him,	98
Driver,	Slightly injured by being kicked by a mule,	99
Driver,	Slightly injured; his hand was caught by door in mine car,	100
Miner,	Slightly injured by a fall of top and boney coal,	101
Miner,	Slightly injured by an explosion of powder,	102
Driver,	Slightly burned by an explosion of powder,	103
Door boy,	Slight fracture of the skull when in the act of jumping off loaded car in mine,	104
Laborer,	Slightly injured by being hit by pieces of coal flying from a blast,	105
Miner,	Slightly injured by fall of roof. He was in the act of cutting out prop when roof fell,	106
Miner,	Slightly injured by a runaway car in his chamber,	107
Driver,	Slightly injured by being run on to by car in mines; riding on bumper and fell in front,	108
Miner,	Slightly injured by a fall of top coal,	109
Laborer,	Slightly injured by a piece of coal rolling over on him,	110
Miner,	Slightly injured by falling off gob on track; also hit on head by piece of slate which rolled on him,	111
Driver,	Slightly injured by falling down and mule falling on him,	112
Door boy,	Slightly injured by being caught between trip of cars and pillar in mines,	113
Door boy,	Ankle injured; one of the bones broken by a piece coal falling from side of main road while passing,	114
Miner,	Slightly burned on side of face by igniting a gas blower,	115
Laborer,	Injured by being kicked by a mule, (not serious,)	116
Miner,	Slightly injured by being caught between a car and prop,	117
Runner,	Slightly injured by being run on to by a car outside,	118
Driver,	Arm dislocated by being thrown off mule while driving to the barn,	119
Miner,	Slightly injured by a premature blast,	120
Slate picker,	Injured; fell from chute in breaker, a distance of twenty-five feet from ground,	121
Driver,	Injured by being thrown off mule; his foot caught in traces, (not serious,)	122
Miner,	Injured by a fall of roof, (not serious,)	123
Driver,	Slightly injured by being caught between two cars,	124
Miner,	Slightly injured; hit in the eye by a piece of coal flying from his pick,	125
Laborer,	Slightly injured; hit on hand by a piece of coal.	126
Miner,	Both men slightly burned by explosion of gas caused by a piece of falling roof	127
Laborer,	bringing the gas down and forcing it on their lamps,	128
Footman,	Slightly injured; caught by hoisting carrage in shaft,	129
Laborer,	Slightly injured by a car jumping the track in mines,	130
Miner,	Slightly injured by a premature blast,	131
Spragger,	Slightly injured by an empty car running over his leg,	132
Fire boss,	Slightly burned by an explosion of fire-damp, (CH_4 gas,)	133
Laborer,	Slightly injured by a fall of top coal,	134
Miner,	Slightly injured by a fall of top coal,	135
Driver,	Slightly injured by a mule falling on him,	136
Gate tender,	Slightly injured by being knocked down by a trip of empty cars,	137
Miner,	Slightly injured by a fall of roof,	138

TABLE No. 3—

DATE.	No. of accident.	Names.	Age.	Colliery where Accident Occurred.	Nationality
July 27	139	Charles Jones,	28	No. 2 Shaft, D. L. & W., Hyde Park, Scranton,	Welsh,
27	140	Thomas Parry,	59	Scranton C. Co. Mines, D. L. & W., Lackawanna twp.	Welsh,
28	141	Morgan Bevan,	12	Central Shaft, D. L. & W., Hyde Park, Scranton,	Welsh,
29	142	John Duggan,		Marvine Shaft, D. & H. C. Co., Providence Scranton,	Irish,
29	143	Michael Jordan,	21	Fair Lawn Slope, F. L. C. Co., Limited, Scranton,	Irish,
31	144	Michael O'Neil,	36	Greenwood Mines, P. A. C. Co., Lackawanna twp.,	Irish,
Aug. 2	145	John Clifford,	49	Sibley Shaft, P. A. C. Co., Lackawanna twp.,	Irish,
3	146	Bryan Flynn,	54	Archbald Shaft, D. L. & W., Lackawanna twp.,	Irish,
4	147	John McDonnell,	17	Gipsy Grove Shaft, Penn'a C. Co., Dunmore bor.,	Irish,
4	148	Thomas Keenan,	21	Fairmount Shaft, A. M. & Co., Pittston township,	Irish,
5	149	Thomas Henley,	55	Taylor Shaft, D. L. & W. R. R. Co., Lackawanna twp.	Irish,
9	150	James Nealon,	32	No. 4 Shaft, Penn'a C. Co., Jenkins township,	Irish,
9	151	John Campbell,	25	Legitt's Creek Shaft, D. & H. C. Co., Prov., Scranton,	Irish,
9	152	Peter Swift,	21	Gipsy Grove Shaft, Penn'a C. Co., Dunmore bor.,	Irish,
11	153	Miles Doran,	14	Taylor Shaft, D. L. & W., Lackawanna township,	Ir sh.
11	154	Ed. Jenkins,	16	Hampton Shaft, D. L. & W., Lackawanna twp.,	Welsh,
14	155	Frank Judd,	14	Ontario Breaker, L. V. C. Co., Pleasant Valley bor.,	American,
14	156	Peter Barrett,	16	Eaton Mines, Jones Simpson & Co., Archbald bor.,	American,
16	157	John Culkin,	18	No. 8 Breaker, Penn'a C. Co., Hughestown bor.,	American,
16	158	Thomas McCarthy,	40	Phœnix Shaft, P. C. Co., Marcy township,	Irish,
18	159	Nicholas Leibtran,	63	Hampton Shaft, D. L. & W., Lackawanna twp.,	German,
19	160	John Martin,	17	Shaft No. 7, Penn'a C. Co., Jenkins township,	Scotch,
21	161	Levi Morris,	32	Bridge Mines, B. C. Co., Hyde Park, Scranton,	Welsh,
23	162	James Williams,	15	Jermyn, No. 2 Breaker, D. & H. C., Jermyn bor.,	American,
23	163	Frank Zanskey,	35	White Oak Mines, D. & H. C. Co., Archbald bor.,	Bohemian,
26	164	Joseph Holsmister,	15	No. shaft-chutes, D. & H. C. Co., Carbondale City,	American,
28	165	David Powell,	13	Archbald Shaft, D. L. & W., Lackawanna twp.,	American,
29	166	Joseph Holtham,	25	Throop Shaft, J. Jermyn, Esq., Dickson City,	English,
29	167	William Bennett,	46	Throop Shaft, J. Jermyn, Esq., Dickson City,	English,
29	168	Ed. Morris,	36	Grassy Island Shaft, D. & H. C. Co., Olyphant bor.,	American,
30	169	Thomas Stewart,	55	Spring Brook Mines, H. C. & I. Co., Lackawanna twp	Welsh,
30	170	Louis Gardner,	15	Barnum Shaft, Penn'a C. Co., Marcy township,	American,
30	171	Michael Gavin,	47	Archbald Shaft, D. L. & W., Lackawanna twp.,	Irish,
Sept. 2	172	William Curtis,		Columbia Mines, Grove Bros., Marcy township,	
5	173	Edward T. John,	45	Bridge Slope, B. C. Co., Hyde Park, Scranton,	Welsh,
6	174	Martin Scott,	17	Hampton Shaft, D. L. & W., Lackawanna twp.,	Irish,
9	175	William Abbott,	20	Fairmount Shaft, A. M. & Co., Pittston township,	American,
11	176	John Niper,	16	Sibley Shaft, P. A. C. Co., Old Forge township,	American,
12	177	John Lilly,	45	Continental Shaft, D. L. & W., Lackawanna twp.,	Irish,
12	178	Martin Tigue,	40	Continental Shaft, D. L. & W., Lackawanna twp.,	Irish,
13	179	Thomas Tierney,	15	No. 10 Breaker, Penn'a C. Co., Hughestown bor.,	American,
18	180	Reese Charles,	17	Pyne Shaft, D. L. & W., Lackawanna township,	Welsh,
20	181	Thomas Durkin,	40	Hampton Shaft, D. L. & W., Lackawanna twp.,	Irish,
20	182	John Barrett,	45	Barnum Shaft, Penn'a C. Co., Marcy township,	Irish,
20	183	Alfred Payne,	40	Mount Pleasant Slope, M. P. C. Co., H. P., Scranton,	English,
22	184	Charles Keoon,	15	Taylor Shaft., D. L. & W., Lackawanna twp.,	English,
23	185	Patrick O'Rourke,	14	White Oak Mines, D. & H. C. Co., Archbald bor.,	American,
26	186	Patrick Burke,	16	Sloan Shaft, D. L. & W., Lackawanna township,	Irish,
26	187	Thomas Hewitt,	47	Everhart Mines, T. W. & Co., Jenkins township,	English,
29	188	John O'Boyle,	38	Jermyn, No. 3, D. & H. C. Co. & D. L. & W., Scranton,	Irish,
Oct. 6	189	John Purcel,	27	Mosier Shaft, B. C. Co., Hughestown borough,	American,
7	190	Patrick Walsh,	16	Tripp's Slope, D. L. & W., Hyde Park, Scranton,	Irish,
7	191	John R. Evans,	45	Jermyn, No. 3, Shaft, D. & H. C. Co. & D. L. & W., Scranton.	Welsh,
7	192	Michael McHale,	50	Butler Mines, B. C. Co., Pittston township,	Irish,
9	193	Samuel Davenhall,	22	No. 13 Shaft, Penn'a C. Co., Pleasant Valley bor.,	English,
10	194	Patrick Sweeney,	23	No. 10 Shaft, Penn'a C. Co., Hughestown borough,	Irish,
10	195	Michael Duffy,	22	No. 10 Shaft, Penn'a C. Co., Hughestown borough,	Irish,
13	196	Martin Burke,	35	Butler Shaft, B. C. Co., Pittston township,	Irish,
16	197	John Sayboy,	31	Bellevue Mines, D. L. & W., Lackawanna twp.,	Hungarian
18	198	Martin McAndrew,	15	Marvine Shaft, D. & H. C. Co., Providence, Scranton,	Irish,
19	199	David Thomas,	16	Hampton Shaft, D. L. & W., Lackawanna twp.,	Welsh,
19	200	Robert Wallace,	13	Fairmount Shaft, A. M. & Co., Pittston twp.,	American,
19	201	Thomas Battle,	45	Eaton Mines, J. S. & Co., Archbald borough,	Irish,
20	202	John Hog,	16	No. 1 Tunnel, Penn'a C. Co., Pittston township,	American,
21	203	William Hughes,	14	Continental Shaft, D. L. & W., Lackawanna twp.,	Welsh,
23	204	Patrick Sheridan,	45	No. 2 Slope, Penn'a C. Co., Jenkins township,	Irish,
24	205	Felix O'Hara,	50	Taylor Shaft, D. L. & W., Lackawanna twp.,	Irish,
25	206	James Ready,	45	Von Storch Mines, D. & H. C. Co., Prov., Scranton,	Irish,
30	207	John T. Williams,	42	Sloan Shaft, D. L. & W., Lackawanna township,	Welsh,
30	208	Theophilus Griffiths	21	Sloan Shaft, D. L. & W., Lackawanna township,	Welsh,
30	209	Daniel James,	13	Sloan Shaft, D. L. & W., Lackawanna township,	Welsh,
30	210	Martin Ruane,	16	Central Shaft, D. L. & W., Hyde Park, Scranton,	Irish,
31	211	Moses Lane,	19	Marvine Shaft, D. & H. C. Co., Providence, Scranton,	English,
31	212	Patrick McNulty,	18	No. 9 Shaft, Penn'a C. Co., Hughestown borough,	American,

Continued.

Occupation.	Nature or Cause of Accident.	No. of accident.
Laborer,	Two toes fractured by a fall of slate roof,	139
Door-tender,	Slightly injured; caught between car and rib,	140
Slate-boy,	Slightly injured; foot caught in cog wheel in breaker,	141
Miner,	Slightly injured; pick stuck into his leg,	142
Laborer,	Slightly injured by an explosion of gas,	143
Laborer,	Slightly injured by a shot through a pillar,	144
Miner,	Slightly injured by a fall of top coal,	145
Miner,	Slightly injured by a fall of roof,	146
Driver,	Slightly injured by falling down the shaft, a distance of fifty feet,	147
Laborer,	Slightly injured by a fall of roof,	148
Miner,	Slightly injured by an explosion of powder while making a cartridge,	149
Laborer,	Two small bones in foot broken below instep while running car out of chamber,	150
Miner,	Burned slightly by an explosion of powder, while making a cartridge,	151
Laborer,	Injured slightly by being struck by a piece of coal flying from a blast,	152
Slate-picker,	Injured by falling from telegraph on to beam in breaker,	153
Driver,	Slightly injured by being run over by trip of cars,	154
Driver,	Slightly injured by being kicked by a mule,	155
Driver,	Slightly injured; caught by cars,	156
Car-mender,	Slightly injured; caught between large railroad car and post of breaker,	157
Miner,	Injured slightly by a premature explosion of a blast,	158
Car-loader,	Slightly injured by falling off platform of prepared coal chutes,	159
Laborer,	One finger cut off; caught between car and roof,	160
Miner,	Slightly injured by a fall of coal,	161
Driver,	Injured slightly; squeezed between two large railroad cars at breaker,	162
Miner,	Slightly injured by a fall of coal,	163
Car-loader,	Injured slightly; caught between large railroad cars and chute,	164
Door-boy,	Injured by being caught between car and rib,	165
Track-layer,	Slightly injured by a fall of roof,	166
Miner,	Slightly injured by the same fall of roof,	167
Miner,	Injured slightly by fall of roof,	168
Miner,	Slightly injured by a fall of top coal,	169
Driver,	Injured slightly by a car on culm dump,	170
Miner,	Slightly injured by a fall of roof,	171
Miner,	Injured slightly by an explosion of powder,	172
Miner,	Slightly injured by a fall of roof,	173
Car-runner,	Injured slightly; squeezed between two cars,	174
Driver-boss,	Slightly injured by a premature blast,	175
Driver,	Injured slightly by being kicked by a mule,	176
Miner,	Both men slightly injured by a fall of bony coal,	177
Miner,		178
Outside driver,	Big toe cut off; caught between rope and sheave-wheel,	179
Driver,	Flesh on right leg badly mashed by car running on to it,	180
Miner,	Slightly injured by a fall of roof,	181
Miner,	Injured slightly by a fall of black rock,	182
Water-baller,	Slightly injured; caught between empty car and rib,	183
Helper,	Injured by being stepped on by mule,	184
Driver,	Slightly injured by being kicked in head by a mule,	185
Driver,	Injured slightly; caught under wheel of mine car,	186
Miner,	Slightly injured by a fall of coal,	187
Miner,	Injured slightly by a piece of coal from a blast striking him,	188
Miner,	Slightly injured by a fall of coal and rock,	189
Driver,	Injured by being kicked by a mule,	190
Miner,	Burned by an explosion of powder in keg; spark from lamp fell into keg while he was making a cartridge,	191
Laborer,	One finger cut off by a piece of coal falling on it from top of shaft,	192
Laborer,	Slightly injured by a fall of rock,	193
Laborer,	Both men were injured by a fall of rock and rider coal; Duffy very slightly,	194
Laborer,		195
Miner,	Injured; two ribs broken by a fall of top coal, (not serious,)	196
Foot-man,	Injured by being caught between two cars at surface landing of shaft,	197
Driver,	Cut on head; caught between car and pillar,	198
Driver,	Severe flesh wound on leg; run over by a trip of mine cars,	199
Slate-picker,	Slightly injured by falling down the shaft, while climbing down the buntings,	200
Miner,	Slightly injured by a fall of roof,	201
Driver,	Injured slightly; caught between mine car and prop,	202
Car-oiler,	Slightly injured; squeezed between cars in mine,	203
Platform-man,	Injured slightly; fell into chute and hurt his hip,	204
Laborer,	Slightly injured by a fall of roof,	205
Miner,	Burned slightly by an explosion of gas,	206
Mining-boss,	These parties were slightly burned by an explosion of fire-damp, set off by a lamp carried by John T. Williams, the mining-boss. There was a crush in the mine, and he was exploring to find out its cause,	207
Comp'y laborer,		208
Driver's helper,		209
Driver,	Slightly injured; caught between a car and prop,	210
Laborer,	Injured slightly by being kicked by a mule,	211
Wheel-runner,	Slightly injured; hand caught between car-wheel and rail,	212

TABLE No. 3—

DATE.	No. of accident.	Names.	Age.	Colliery where Accident Occurred.	Nationality
Nov. 2	213	William Weltz, . .	40	Stetler Shaft, Stitler & Co., Marcy township, . . .	German, .
2	214	John Bosher, . .	35	Stetler Shaft, Stitler & Co., Marcy township, .	German, .
2	215	Thomas Lamman,	25	Stetler Shaft, Stitler & Co., Marcy township, . . .	Scotch, . .
3	216	John Volkers, . .	22	Pine Brook Shaft, L. I. & C. Co., Scranton, . . .	German, .
3	217	Michael McHale, .	38	No. 2 Shaft, Penn'a C. Co., Dunmore borough, .	Irish, . . .
8	218	John Davis,	14	Pyne Shaft, D. L. & W., Lackawanna township, .	Welsh, . .
13	219	James Kennedy, .	30	Phœnix Shaft, P. C. Co., Marcy township, ...	Irish, . . .
13	220	William Kennedy,	20	Phœnix Shaft, P. C. Co., Marcy township, ...	Irish, .
13	221	James Hall, Jr., .	30	Phœnix Shaft, P. C. Co., Marcy township. . .	English, .
14	222	Michael Burke. . .		Law Shaft, Penn'a C. Co., Pleasant Valley bor., .	Irish. . . .
14	223	Wm. Dougherty, . .		Law Shaft, Penn'a C. Co., Pleasant Valley bor., .	Irish. . .
14	224	Thomas Dunn, . .		Law Shaft, Penn'a C. Co., Pleasant Valley bor., .	American,
14	225	Peter Joyce, . .	36	Phœnix Shaft, P. C. Co., Marcy township, . .	Irish,
14	226	William Ryan, .	14	Barnum Shaft, Penn'a C. Co., Marcy township, .	American,
14	227	Owen O'Malley, .	14	No. 11 Shaft, Penn'a C. Co., Jenkins township,	American,
16	228	Joseph Rankin, . .	30	Legitt's Creek Shaft, D.& H.C.Co..Prov..Scran'n,	Scotch, .
21	229	Anton Beck, .	40	Pine Brook Shaft, L. I. & C. Co., Scranton, . . .	German, .
21	230	William H. Davis,	17	Central Shaft, D. L. & W., Lackawanna twp., . .	Welsh, . .
24	231	Thomas Gaffney, . .		Belmont Mines, B. C. Co., Carbondale city, . . .	Irish, . .
24	232	Martin Curley, . .		Stark Shaft, Penn'a C. Co., Lackawanna twp., . .	Irish, . . .
25	233	John W. James. .	35	Caponse Shaft, L. I. & C. Co., H. P., Scranton, .	Welsh, . .
28	234	James Cummings,	40	Archbald Shaft, D. L. & W., Lackawanna twp., .	Irish. . . .
28	235	Patrick McGowen,	14	Green Ridge Slope, G. R. C. Co., Dunmore bor., .	American,
28	236	Peter Walsh, Jr., .	24	White Oak Mines. D. & H. C. Co., Archbald bor.,	German, .
Dec. 2	237	Thos. Micolltrock,	25	Dodge Shaft, D. L. & W., Lackawanna twp., . . .	Polish, . .
4	238	Michael Mulligan,	35	Bridge Slope, B. C. Co., Hyde Park, Scranton, . .	Irish, . . .
6	239	William Sweeney,	40	Shaft No. 10, Penn'a C. Co.. Hughestown bor., . .	Irish, .
9	240	Joseph Brown, . .	28	Butler Shaft, B. C. Co., Pittston township, . .	German, .
9	241	John Thiel, . .	26	Butler Shaft, B. C. Co., Pittston township, .	German, .
11	242	Joseph Kenley,	37	Ontario Mines, L. V. C. Co., Pleasant Valley bor.,	German, .
15	243	Anthony Moran, .		Stark Shaft, Penn'a C. Co., Lackawanna twp., . .	Irish, .
18	244	Charles Arwidson,	24	Stetler Shaft, Stetler & Co., Marcy township,	Swedish, .
18	245	Michael Langan, .	16	Spring Brook Mines, H. C. & I. Co., Lacka. twp.,	Irish, . . .
22	246	James Conway,	28	Tompkins Shaft, G. R. Wilson & Co.. Pittston bor.,	Irish, .
22	247	Michael Lynch,	16	Erie Shaft, H. C. & I. Co., Greenwood borough, .	American,
22	248	Charles Naughton,	24	Butler Shaft, B. C. Co.. Pittston township. .	Irish, . .
23	249	James Brown, . . .	35	Stark Shaft, Penn'a C. Co.. Lackawanna twp., .	Scotch, . .
26	250	Thomas Millet, . .	28	Sibley Shaft, A. C. Co., Old Forge township, .	Irish. . .
26	251	Morgan Jenkins, .	16	Continental Shaft, D. L. & W., Lackawanna twp.,	Welsh, . .
27	252	John Hopkins, . .	16	Continental Shaft, D. L. & W., Lackawanna twp.,	Welsh, . .
28	253	David Williams, .	42	Marvine Shaft, D. & H. C. Co., Prov., Scranton, .	Welsh, . .

NOTE.—There were 253 slight accidents.

Continued.

Occupation.	Nature or Cause of Accident.	No. of accident.
Miner,	These three men were slightly injured by an explosion of gas,	213
Laborer,		214
Laborer,		215
Laborer,	Blasting barrel shot through his thigh by a blast; did not get far enough away before blast went off,	216
Miner,	Burned severely, but not seriously, by an explosion of powder in keg while in the act of making a cartridge,	217
Helper,	Slightly injured by being caught between cars,	218
Miner,	These three men slightly burned by an explosion of gas; Hall went into Kennedy's place with lamp on his head while they were sitting down close to face, and set off the gas,	219
Miner,		220
Miner,		221
Miner,	These two men were slightly injured by a fall of roof,	222
Miner,		223
Driver,	Slightly injured by being kicked by a mule,	224
Miner,	Injured slightly by a piece of coal falling on his leg,	225
Driver,	Leg dislocated by a car running on it,	226
Driver,	Slightly injured; fell under a car,	227
Laborer,	Injured slightly by a fall of roof,	228
Miner,	Burned slightly by a cartridge he was making exploding in his hands,	229
Driver,	Slightly injured by being kicked by a mule,	230
Laborer,	Injured slightly by a fall of rock roof,	231
Miner,	Injured by a fall of roof,	232
Miner,	Injured by a fall of bony coal roof,	233
Miner,	Hand slightly injured by being caught between car-wheel and rail,	234
Gate-tender,	Slightly injured by being hit by a piece of coal flying from a blast,	235
Miner,	Injured slightly by being squeezed between a mine car and gob,	236
Laborer,	Two fingers cut off by a car running over them,	237
Miner,	Slightly injured by a fall of roof,	238
Miner,	Injured by a fall of rider coal,	239
Miner,	Thumb cut off by a fall of rock,	240
Miner,	Slightly injured by a fall of rock,	241
Footman,	Injured slightly by being caught between car and rib,	242
Laborer,	Slightly injured; fell down the shaft a distance of about twenty feet,	243
Laborer,	Injured slightly by a fall of roof,	244
Driver,	Slightly injured; knocked down by a mule; caught between a car and rib,	245
Miner,	Injured (not seriously) by a fall of roof,	246
Driver,	Slightly injured on left leg by being jammed between cars,	247
Miner,	Injured slightly by a fall of top coal,	248
Miner,	Slightly injured by a fall of black rock in middle of coal,	249
Laborer,	Injured slightly by a piece of rock striking him on the leg,	250
Driver,	Slightly injured by being kicked by a mule,	251
Driver,	Injured slightly by being jammed between car and rib,	252
Laborer,	Slightly injured by being hit by a piece of coal flying from a blast,	253

TABLE No. 4.—*The number of each class of employés at each colliery in the and a portion of Wayne and Susquehanna counties,*

MISCELLANEOUS

NAME OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF		
	Bosses.	Miners.	Laborers.	Drivers and runners.	Door-boys.	All company men.	Total inside.	Bosses.	Mechanics.	Head & plate men.
1. Everhart Slope,	1	22	22	13	2	4	64	1	2	6
2. Eagle Shaft,	1	12	18	4	. .	8	43	2	4	2
3. Tompkins Shaft,	1	22	18	8	1	11	61	1	2	4
4. Fairmount Shaft,	1	44	38	14	11	8	116	1	3	7
5. Seneca Slope,	2	35	30	21	6	21	115	1	6	5
6. Twin Shaft,	1	52	35	20	5	18	131	1	6	6
7. Beaver Slope,	1	7	7	5	1	2	23	1	2	. .
8. Butler Shaft,	1	40	40	20	5	6	112	1	11	5
9. Mosier Shaft,	1	36	36	13	4	12	102	1	7	7
10. Heidelberg Shaft,	2	37	30	15	5	25	114	2	5	5
11. Phœnix Shaft,	2	34	34	7	2	8	87	1	3	5
12. Columbia Tunnel,	1	11	11	4	2	1	30	1	3	2
13. Stetler Shaft,	1	65	70	16	6	20	178	1	7	4
14. Hillside Shaft,	1	40	40	28	11	18	138	1	5	7
15. Spring Brook Tunnel,	1	47	46	30	9	41	174	1	6	4
16. Greenwood Tunnels, Slope, and Shaft,	2	89	71	45	13	26	246	1	5	8
17. Sibley Shaft,	1	50	10	17	5	7	90	1	6	5
18. National Slope and Meadow Brook Tunnel,	2	108	30	39	17	21	217	2	9	6
19. Meadow Brook Shaft,	1	85	38	33	12	12	181	1	8	6
20. Bridge Slope,	2	38	38	16	7	16	117	1	4	7
21. Mount Pleasant Slope,	1	58	58	30	8	9	164	1	7	7
22. Capouse Shaft,	1	145	154	66	16	58	440	1	14	9
23. Pine Brook Shaft,	1	22	33	2	2	25	85	1	7	3
24. Fair Lawn Slope,	1	25	29	10	4	4	73	1	7	4
25. Green Ridge Slope,	1	80	73	46	16	18	234	1	5	9
26. Lucas Shaft,	1	10	10	. .	. . .	16	37	. .	3	. .
27. Elk Hill Tunnel,	1	35	22	16	6	5	85	3	3	4
28. Pancoast Shaft and Slope,	1	59	62	21	7	21	171	1	4	11
29. Throop Shaft,	1	18	18	5	. . .	6	48	1	6	4
30. Lackawanna Coal Company's Shaft,*	1	12	14	3	. . .	4	34	1	5	5
31. Filler's Shaft,	2	77	16	39	4	14	152	1	2	5
32. Filler's Slope,	2	35	4	11	4	8	64	1	5	6
33. Pierce Coal Company's Tunnel,	1	100	96	29	12	13	251	1	11	10
34. Eaton Slope and Tunnel,	2	120	5	30	8	9	174	2	5	7
35. Erie Shaft,	1	106	. . .	25	7	22	161	1	7	8
36. Keystone Tunnel,	1	29	.	2	. . .	3	35		2	.
37. Forest City Tunnel,	1	10	10	5	2	2	30	1	2	2
38. Belmont Drifts,	1	68	40	33	7	10	159	2	3	5
39. Elk Creek mine,	1	10	10	1	2	. . .	24	2	2	3
	48	1,893	1,316	742	229	532	4,760	43	204	203

PENNSYLVANIA

40. Slope No. 2,	1	28	27	12	1	11	80	1	5	3
41. Shaft No. 6,	1	38	34	18	4	14	109	1	4	7
42. Shaft No. 5,	1	42	42	17	4	9	115	. .	4	9
43. Shaft No. 11,	.	19	17	9	2	5	52		2	3
44. Shaft No. 7,	1	46	46	19	5	18	135	1	4	6
45. Shaft No. 4,	1	62	42	13	6	13	137	1	4	8
46. Slope No. 4,	1	46	46	18	2	11	124	1	5	5
47. Tunnel No. 1,	1	45	20	9	3	6	84	1	3	4
48. Slope No. 6,	.	18	17	5	1	4	45	1	1	3
49. Shaft No. 1,	.	22	21	4	1	3	51		1	3
50. Shaft No. 8,	1	42	39	10	3	10	105	1	3	7
51. Shaft No. 9,	1	46	46	12	3	10	118	1	1	2
52. Shaft No. 10, 7-foot vein,										
53. Shaft No. 10, 14-foot vein,	1	16	18	10	2	8	55	1	4	3
54. Shaft No. 10, Marcy vein,	1	68	58	19	5	11	162	1	5	8
55. Barnum, No. 1, 7-foot vein,	1	44	44	13	4	6	112	1	5	4
56. Barnum, No. 1, 14-foot vein,	1	42	42	12	6	8	111	1	3	3

* No coal mined in 1882.

Eastern district of Luzerne and Carbon counties, now including all of Lackawanna for year ending 31st day of December, A. D. 1882.

COAL COMPANIES.

PERSONS EMPLOYED OUTSIDE.				Total Inside and out.	Number of horses and mules.	Number of kegs of powder used in 1882.	Number of tons of coal mined in 1882.	Number of days worked in 1882.	Number of persons killed.	Number of persons seriously injured.	Tons of coal mined per life lost.	Tons of coal mined for each person injured seriously.	Tons of coal mined for each employee.	No. of collieries.
Slate pickers.	Drivers and runners.	All company men.	Total outside.											
30	4	3	46	110	11	1,737	44,954	257¾	. .	. .	. . . .	. . . .	408½	1
10	1	15	34	77	8	158	4,219	60	. .	. .	. . . .	. . . .	. . .	2
23	2	11	43	104	8	150	1,500	35	. .	. .	. . . .	. . . .	. . .	3
33	3	6	53	169	15	3,150	57,968	242	1	. .	57,986	. . . .	343	4
51	5	16	84	199	21	865	21,973	104	. .	1	. . . .	21,973	. . .	5
40	5	10	68	199	20	2,705	49,500	239	. .	. .	. . . .	. . . .	249	6
4	. . .	.	7	30	4	490	19,587	262	. .	. .	. . .	. . . .	652½	7
40	4	7	68	180	22	2,815	56,000	245	. .	2	. . . .	28,000	311	8
49	3	10	77	179	13	2,655	67,985	252	. .	. .	. . .	. . . .	380	9
35	3	26	76	190	14	2,100	55,500	231	. .	. .	. . .	12,912	538	10
36	4	5	54	141	15	1,240	31,417	192	1	1	31,417	3,927	223	11
10	1	2	19	49	5	658	25,825	203	. .	. .	. . .	. . . .	527	12
35	1	16	64	242	24	1,600	35,125	114	2	. .	17,563	. . . .	. . .	13
15	3	18	49	187	30	2,155	58,031	241	. .	1	. . . .	58,031	310	14
25	7	20	63	237	39	1,903	69,700	223½	1	. .	69,700	13,940	295	15
60	10	24	108	354	48	6,095	140,023	224	2	. .	140,023	70,011	398	16
40	3	33	88	178	26	3,487	76,420	210	. .	1	. . . .	15,284	430	17
60	5	22	104	321	39	4,867	121,682	223	1	1	121,682	30,420	379	18
60	7	18	100	281	31	5,165	123,979	225	. .	2	. . .	30,995	441	19
74	10	27	123	240	34	2,222	68,585	232	2	1	34,292	17,146	285	20
77	5	7	104	268	37	3,365	126,926	244½	4	2	31,731½	63,463	474	21
55	5	45	129	569	88	10,600	326,340	242	2	4	163,170	81,585	573½	22
10	1	9	31	116	8	500	14,223	109	1	. .	14,223	. .	. .	23
48	5	6	71	144	17	1,515	38,633	204½	. .	1	. . . .	38,633	268	24
60	3	35	113	347	45	. . . .	151,511	249	. .	1	. .	151,511	465	25
. .	. . .	14	17	54	5	35	1,500	. . .	. .	. .	. . . .	. .	. . .	26
35	2	8	55	140	16	1,620	55,963	. .	. .	1	. . .	55,963	340	27
40	. .	29	85	256	20	2,921	63,707	222	. .	1	. .	63,707	250	28
18	. . .	17	46	94	. . .	340	8,390	39	3	. .	2,797	. . . .	. .	29
15	. . .	15	41	75	. . .	. . . .	. .	. .	. .	. .	. . . .	. . . .	. . .	30
25	4	30	67	219	27	3,241	58,348	. . .	. .	. .	. . . .	. . . .	.	31
9	5	32	58	122	18	3,241	29,070	. .	. .	. .	. . . .	. . . .	264	32
70	10	30	132	383	24	4,270	129,706	223½	. .	1	129,706	. . . .	338	33
22	5	51	92	266	43	3,444	102,911	247	. .	. .	. .	. .	390	34
22	2	16	56	217	36	3,207	92,437	241	1	2	92,437	30,412	425	35
. .	. . .	2	4	39	5	.	663	3	. .	. .	. . . .	. . . .	. . .	36
4	1	2	12	42	9	429	14,465	202	. .	. .	. . . .	. . . .	344	37
27	6	5	48	207	18	2,733	56,671	267	1	1	56,671	56,671	274½	38
4	4	10	23	47	5	27	788	10	1	. .	788	. . . .	. . .	39
1,271	139	652	2,512	7,272	848	84,464	2,402,243	. . .	23	24	104,445	100,093	330½	

COAL COMPANY.

1	. .	8	18	98	15	Powder not given.	49,435	255	.	. .	. . . .	24,717	501	40
30	5	6	53	162	19		57,930	254	.	1	. . .	57,930	357	41
35	7	7	62	177	22		70,776	255	. .	1	. . .	35,388	402	42
14	5	5	29	81	9		29,530	254	. .	. .	. . . .	29,530	360	43
4	. . .	11	26	161	21		77,840	224	. .	. .	. . . .	25,946	484	44
2	. . .	6	21	158	15		77,771	255	. .	1	. . . .	25,923	492	45
1	6	9	27	151	31		66,155	255	1	2	. . .	22,051	438	46
. .	2	5	15	99	11		39,008	255	.	2	39,008	9,752	394	47
9	2	3	19	64	9		28,056	257	. .	. .	. . . .	28,056	438	48
9	2	3	18	69	7		31,163	257	. .	. .	. . . .	. . . .	452	49
18	2	9	40	145	14		66,855	257	. .	. .	. . . .	. . . .	461	50
24	2	8	38	156	17		81,712	254	.	1	. . .	20,428	531	51
							24,018	254	. .	.	. . .	24,018	465	52
11	2	4	25	80	17		13,212	254	. .	1	. . . .	3,303		53
25	2	13	54	216	21		87,876	254	. .	. .	. . .	43,938	407	54
13	5	9	37	149	11		88,798	255	1	. .	88,798	88,798	596	55
13	3	8	31	142	11		80,433	255	1	. .	80,433	40,216	566	56

TABLE No. 4—
PENNSYLVANIA COAL

NAME OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF		
	Bosses.	Miners.	Laborers.	Drivers and runners.	Door boys.	All company men.	Total Inside.	Bosses.	Mechanics.	Head and plate men
57. Barnum, No. 2, 7-foot vein,	. . .	22	22	6	1	4	55	. .	.	3
58. Barnum, No. 2, 14-foot vein,	. .	20	20	6	2	3	51	. .	5	3
59. Shaft No. 12,	1	40	40	15	1	7	104	1	2	7
60. Shaft No. 13,	1	12	16	8	2	6	45	.	2	2
61. Law Shaft,	1	40	40	12	4	11	108	1	6	9
62. Stark Shaft,	1	50	29	14	5	13	112	1	5	9
63. No. 2 Breaker,	. . .	. . .	. . .	. . .	. . .	. . .	. . . .	1	1	5
64. Carbon Hill,	. . .	. .	.	. . .	. . .	. . .	. . . .	1	2	2
65. New Shaft, Lackawanna,	1	5	1	.	.	.	7	. .	2	1
66. Shaft No. 2,	1	38	38	10	6	13	106	1	1	5
67. Shaft No. 3,	1	39	40	10	4	4	97	3	1	14
68. Shaft No. 4,	. . .	43	43	16	7	10	119	. .	. .	. .
69. Dunmore Breaker,	. . .	. .	. .	. . .	. . .	. . .	. . . .	3	1	. .
70. Dunmore Screens,	. . .	. .	. .	. . .	. . .	. . .	. . . .	2	1	10
	20	933	848	297	84	218	2,400	27	83	148
DELAWARE, LACKAWANNA AND										
71. Pyne Shaft,	1	91	76	38	10	19	235	1	7	6
72. Taylor Shaft,	1	87	80	40	10	30	248	1	11	9
73. Archbald Shaft,	1	68	64	21	3	14	171	1	12	7
74. Sloan Shaft,	1	70	30	24	4	18	147	1	7	6
75. Continental Shaft,	1	80	80	29	7	22	219	1	8	8
76. Hampton Shaft,	1	100	75	44	12	36	268	1	10	15
77. Central Shaft,	1	90	91	34	9	31	256	1	9	6
78. Hyde Park Shaft,	1	81	78	31	8	22	221	1	7	7
79. Bellevue Shaft,	1	49	49	12	5	11	127	. .	.	. .
80. Bellevue Slope,	1	42	42	12	2	12	111	1	12	13
81. Scranton Coal Company,	1	41	46	9	5	18	120	1	7	8
82. Oxford Shaft,	. . .	18	12	. . .	. .	. . .	30	. .	7	
83. Dodge Shaft,	1	82	80	31	4	16	214	1	9	14
84. Diamond No. 2 Shaft, G vein,	1	48	48	25	4	14	140	.		
85. Diamond No. 2 Shaft, E F vein,	1	41	44	19	4	13	125	1	24	9
86. Diamond No. 2 Slope,	1	44	42	20	8	18	133	. .	7	10
87. Diamond Tripp Slope,	1	39	27	33	4	20	124	.	.	
88. Brisbin Shaft,	1	82	82	31	10	18	224	1	7	10
89. Cayuga Shaft,	1	75	52	44	7	28	207	1	8	7
90. Storr's Shaft,	1	18	. . .	. . .	. . .	. .	19	. .	2	. .
91. Jermyn No. 3,	1	88	88	40	16	25	258	1	8	8
92. Carpenter gang,	.	. . .	. . .	. . .	.	. . .	. . . .	. .	60	.
93. Machinist gang,	. . .	. . .	. . .	. . .	. . .	. . .	3	. .	14	. .
94. Mason gang,	. . .	. . .	. . .	. . .	. . .	. . .	. . . .	. .	15	. .
95. Weighmaster's gang,	. . .	. . .	. .	. . .	. . .	. . .	. . . .	. .	.	.
	20	1,337	1,186	537	132	385	3,600	15	251	143
DELAWARE AND HUDSON										
96. Jermyn No. 3 Shaft,	1	88	88	40	16	25	258	1	8	8
97. Von Storch Mines,	2	135	120	91	20	69	437	1	20	15
98. Leggit's Creek Shaft,	1	96	77	56	14	37	281	1	17	8
99. Marvine Shaft,	1	96	80	76	10	38	301	1	16	10
100. Eddy Creek Shaft,	. . .	. .	. .	. . .	. . .	. .	. . . .	1	2	1
101. Olyphant No. 2 Shaft,	1	82	72	35	6	20	216	1	6	8
102. Grassy Island Shaft,	2	112	38	36	15	22	225	1	6	10
103. White Oak Mines,	1	86	30	34	8	11	170	1	6	5
104. Jermyn No. 2 Slope,	1	58	29	17	2	6	113	1	1	6
105. Jermyn No. 1 Shaft,	1	96	31	30	10	14	182	1	5	8
106. Powderly Slope,		Pumping		out	water	at	present	1	1	4
107. No. 3 Shaft, Carbondale,	1	47	13	23	6	12	102	1	6	5
108. No. 1 Shaft, Carbondale,	1	143	40	36	8	14	242	1	6	9
109. Coal Brook Mines,	1	160	50	54	14	20	299	1	9	6
110. Racket Brook Breaker,	. . .	. . .	. .	. . .	. . .	. . .	. .	1	1	5
	14	1,199	668	528	129	288	2,826	15	110	108

Continued.

COMPANY—Continued.

PERSONS EMPLOYED OUTSIDE.				Total inside and out.	No. of horses and mules.	No. of kegs of powder used in 1882.	No. of tons of coal mined in 1882.	No. of days worked in 1882.	No. of persons killed.	No. of persons injured seriously.	Tons of coal mined per life lost.	Tons of coal mined for each person injured seriously.	Tons of coal mined for each employee.	No. of colliery.
Slate pickers.	Drivers and runners.	All company men.	Total outside.											
7	3	5	18	145	10	. . .	81,178	255	1	.	40,589	81,878	560	57
7	2	4	21											58
12	6	6	34	138	16	. . . .	56,805	208	. .	. .	. . . .	.	412	59
6	5	5	20	65	18	. . . .	16,113	221	2	. .	8,056	8,056	248	60
12	10	6	44	152	21	. . . .	58,733	221	2	. .	29,366	14,683	386	61
26	5	12	58	170	19	. . . .	76,521	256	. .	. .	. .	25,507	450	62
40	4	8	59	59	Prepa res coal for mines			hav ing		no	breaker			63
. . .	. . .	1	6	6	Has b een fille d with wa ter so me					yrs:	being	pu'ped	out.	64
. . .	. . .	1	4	11	Sinking.									65
. . .	. . .	13	20	126	13	. . . .	55,701	252	1	. .	55,701	55,701	. . .	66
25	8	19	70	286	15	. . . .	29,084	. .	1	1	.	29,084	. .	67
. . .	. . .	. . .	. .	. . . .	16	. . . .	88,578	247	1	1	88,578	22,145	. . .	68
36	6	8	54	54	. .	. . . .	. . . . .	. .	. .	. .	. . . .	. . . . .	. . .	69
34	3	14	64	64	. . .	. . . .	. . . . .	. .	. .	. .	. . . .	. . . . .	. . .	70
414	97	216	985	3,385	378	. . . .	1,433,281	249¾	11	11	130,296	130,296	423½	

WESTERN RAILROAD COMPANY.

66	10	30	120	355	52		181,082	231	2	.	. . .	. . .	. . .	71
70	7	28	126	374	50		153,846	236	3	3	. . . .	. . . . .	. . .	72
64	6	22	112	283	48		99,638	231	1	2	. . . .	. . . . .	. . .	73
55	4	23	96	243	46		100,243	212	5	1	. . . .	. . . . .	. . .	74
54	4	28	103	322	37		149,878	239	1	. .	. . . .	. . . . .	. . .	75
80	11	26	143	411	64		172,282	236	1	3	. . . .	. . . . .	. . .	76
60	6	30	112	368	55		172,110	240	5	2	. . . .	. . . . .	. . .	77
60	5	21	101	322	42		118,950	223½	1	1	. . . .	. . . . .	. . .	78
. . .	. . .	. . .	. .	. .	27		82,555	229	. .	. .	. . . .	. . . . .	. . .	79
98	10	34	168	406	53		78,174	229	. .	1	. . . .	. . . . .	. . .	80
32	7	26	81	201	27		36,193	176	1	1	. . . .	. . . . .	. . .	81
. .	. . .	7	14	44	7		. . . .	. . .	3	2	. . . .	. . . . .	. . .	82
66	8	19	117	331	57		137,515	233	. .	1	. . . .	. . . . .	. . .	83
. .	. . .	. . .	. . .	140	30		78,535	210½	. .	3	. . . .	. . . . .	. . .	84
82	20	35	171	296	50		74,439	222	. .	2	. . . .	. . . . .	. . .	85
60	6	22	105	362	57		71,013	231	1	. .	. . .	. . . . .	. .	86
. . .	. . .	. . .	. .	. . . .	49		67,948	231	. .	3	. . . .	. . . . .	. . .	87
38	8	16	80	304	53		122,374	221	5	4	. . . .	. . . . .	. . .	88
44	4	24	88	295	45		109,923	224	1	1	. . . .	. . . . .	. . .	89
. . .	. . .	3	5	24	2		. . . .	. . .	. .	. .	. . . .	. . . . .	. . .	90
45	5	27	94	352	39		91,500	120	. .	2	. . . .	. . . . .	. . .	91
. . .	. . .	. . .	. .	60	60	. .	. . . . .	. .	. .	. .	. . . .	. . . . .	. . .	92
. .	. . .	. . .	. .	14	17	. . .	. . . .	. .	. .	. .	. . . .	. . . . .	. . .	93
. . .	. . .	27	42	42	. . .		. . . . .	. .	. .	. .	. . . .	. . . . .	. . .	94
. . .	. . .	9	9	9	. . .		. . . . .	. .	. .	. .	. . . .	. . . . .	. . .	95
974	121	457	1,961	5,561	890	. . . .	2,098,198	219¾	30	32	66,607	65,563	394	

CANAL COMPANY.

45	5	27	94	352	39		91,158	119½	1	2	. . . .	. . . . .	. . .	96
50	5	28	119	556	80		231,595	235	1	2	. . . .	. . . . .	. . .	97
49	3	20	98	379	52		154,398	235	1	2	. . . .	. . . . .	. . .	98
39	3	22	81	392	48		149,522	231	2	4	. . . .	. . . . .	. . .	99
. . .	1	2	7	7	. . .		. . . .	. .	. .	2	. . . .	. . . . .	. . .	100
40	2	18	75	291	44		93,264	238½	1	1	. . . .	. . . . .	. . .	101
40	7	29	93	318	46		119,612	236½	2	1	. . . .	. . . . .	. . .	102
50	8	18	88	258	38		109,132	237½	.	. .	. . . .	. . . . .	. . .	103
8	3	10	29	142	16		57,701	185	.	. .	. . . .	. . . . .	. . .	104
36	3	32	85	267	32		115,953	229	2	2	. . . .	. . . . .	. . .	105
. . .	. . .	6	12	12	1		. . . .	. .	. .	. .	. . . .	. . . . .	. . .	106
2	. . .	14	18	120	13		4,572	233	. .	. .	. . . .	. . . . .	. . .	107
4	2	10	32	274	33		33,631	239½	.	4	. . . .	. . . . .	. . .	108
50	13	40	119	419	66		187,900	239½	1	. .	. . . .	. . . . .	. . .	109
40	4	10	61	61	3		157,225	244½	. .	. .	. . . .	. . . . .	. . .	110
453	59	276	1,021	3,847	511	. . . .	1,505,663	223½	11	20	136,878	75,283	415½	

TABLE No. 4—

RECAPITU

NAME OF COLLIERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF		
	Bosses.	Miners.	Laborers.	Drivers and runners.	Door boys.	All company men.	Total inside.	Bosses.	Mechanics.	Head and platemen
111. Miscellaneous coal companies, . . .	48	1,893	1,316	742	229	532	4,760	43	204	203
112. *Pennsylvania Coal Company, . .	20	933	848	297	84	218	2,400	27	83	148
113. *Delaware, Lackawanna and Western Railroad Company, ...	20	1,337	1,186	537	132	385	3,600	15	251	143
114. *Delaware and Hudson Canal Co., .	14	1,199	668	528	129	288	2,826	15	110	108
115. *Local coal sale mines, ...	. . .	70	40	. . .	. . .	. .	110	. .	. .	. .
Totals, ...	102	5,432	4,058	2,104	574	1,423	13,693	100	648	602
Add 6 per cent. for home consumption, steam-power, and furnaces at mines, &c., &c., . . .										
Total, ...										

* Not given.

Continued.

LATION.

PERSONS EMPLOYED OUTSIDE.				Total inside and out.	No. of horses and mules.	No. of kegs of powder used in 1882.	No. of tons of coal mined in 1882.	No. of days worked in 1882.	No. of persons killed.	No. of persons injured seriously.	Tons of coal mined per life lost.	Tons of coal mined for each person injured seriously.	Tons of coal mined for each employee.	No. of colliery.
Slate pickers.	Drivers and runners.	All company men.	Total outside.											
1,271	139	652	2,512	7,272	848	84,464	2,402,243	. . .	23	24	. . . .	. . . .	. . .	111
414	97	216	985	3,385	378	. . . .	1,433,281	. . .	11	11	. . . .	. . . .	. . .	112
974	121	457	1,961	5,568	890	. . . .	2,098,198	. . .	30	32	. . . .	. . . .	. . .	113
453	59	276	1,021	3,847	511	. . . .	1,505,663	. . .	11	20	. . . .	. . . .	. . .	114
. . .	. . .	25	25	135	. . .	. . . .	34,500	. . .	. .	. .	. . . .	. . . .	. . .	115
3,112	416	1,626	6,504	20,197	2,627	84,464	7,473,885	. . .	75	87	. . . .	. . . .	392	
. . . . .							448,433	. . .	6					
. . . . .							7,922,318	. . .	69					

TABLE No. 5.—*Giving the names and locality of Collieries, also names of land Luzerne and Carbon counties, now including all of Lackawanna, and a por- ing 31st day of December, A. D. 1882.*

MISCELLANEOUS

Number.	NAME OF COAL MINE OR COLLIERY.	Where located.	By whom operated.
1	Everhart Slope Colliery,	Jenkins township,	Hon. Thomas Waddell & Co.,
2	Eagle Shaft,	Jenkins township,	Northern Coal Company,
3	Tompkins Shaft,	Pittston township,	G. R. Wilson & Company,
4	Fairmount Shaft,	Pittston township,	A. Morris & Company,
5	Seneca Slope,	Pittston borough,	Pittston Coal Company,
6	Twin Shaft,	Pittston borough,	Pittston Coal Company,
7	Beaver Slope,	Pittston borough,	Waterman & Beaver,
8	Butler Shaft,	Pittston township,	Butler Coal Company,
9	Mosier Shaft,	Hughestown borough,	Butler Coal Company,
10	Heidelberg Shaft,	Pittston township,	Lehigh Valley Coal Company.
11	Phœnix Shaft,	Marcy township,	Phœnix Coal Company,
12	Columbia Tunnel,	Marcy township,	Grove Brothers,
13	Stetler Shaft,	Marcy township,	S. N. Stetler & Company,
14	Hillside Shaft,	Pleasant Valley borough,	Hillside Coal and Iron Company.
15	Spring Brook Mines,	Lackawanna township,	Hillside Coal and Iron Company.
16	Greenwood Mines,	Lackawanna township,	{ Penn'a Anthracite Coal Co., {
17	Sibley Shaft,	Old Forge township,	{ John Jermyn, gen'l manager, }
18	National Slope,	Lackawanna township,	William Connell & Company.
19	Meadow Brook Shaft & Tunnel,	20th ward, city of Scranton,	William Connell & Company,
20	Bridge Slope,	Hyde Park, city of Scranton.	Bridge Coal Company,
21	Mount Pleasant Slope,	Hyde Park, city of Scranton,	William T. Smith,
22	Capouse Shaft,	Hyde Park, city of Scranton,	Lackawanna Iron and Coal Co.,
23	Pine Brook Shaft,	7th ward, city of Scranton,	Lackawanna Iron and Coal Co.,
24	Fair Lawn Slope,	7th ward, city of Scranton,	Fair Lawn Coal Co., (Limited,)
25	Green Ridge Slope,	Dunmore borough,	O. S. Johnson & Company,
26	Lucas Shaft,	2d ward, city of Scranton,	Lucas Coal Co., (Limited,)
27	Elk Hill Tunnel,	Dickson city borough,	Elk Hill Coal and Iron Company,
28	Pancoast Shaft and Slope,	Dickson city borough,	Pancoast Coal Company,
29	Throop Shaft and Slope,	Dickson city borough,	John Jermyn,
30	Lackawanna Coal Co. Shaft,	Blakely borough,	Lackawanna Coal Company,
31	Filer's Shaft,	Winton borough,	Filer and Levey,
32	Filer's Slope,	Winton borough,	Filer and Levey,
33	Pierce Coal Company Tunnel,	Archbald borough,	Pierce Coal Co., (Limited,)
34	Eaton Slope and Tunnel,	Archbald borough,	Jones, Simpson & Company,
35	Erie Shaft,	Greenwood borough,	Hillside Coal and Iron Company,
36	Forest Shaft and Tunnel,	Clifford twp., Susquehanna co	Hillside Coal and Iron Company,
37	Belmont Drifts,	Carbondale city,	Cowen & Deninney.
38	Elk Creek Drift,	Fell township,	Brennan & Bridget,

PENNSYLVANIA

39	Slope No. 2,	Jenkins township,	Pennsylvania Coal Company,
40	Shaft No. 6,	" "	John B. Smith, general sup't,
41	Shaft No. 5,	" "	" "
42	Shaft No. 11,	" "	" "
43	Shaft No. 7,	" "	" "
44	Slope No. 4,	" "	" "
45	Shaft No. 4,	Pittston borough,	" "
46	Tunnel No. 1,	Pittston township,	" "
47	Slope No. 6,	Hughestown borough,	" "
48	Shaft No. 1,	" "	" "
49	Shaft No. 8,	" "	" "
50	Shaft No. 10,	" "	" "
51	Shaft No. 9,	Pittston borough,	" "
52	Barnum Shaft,	Marcy township,	" "
53	Shaft No. 12,	Pleasant Valley borough,	" "
54	Shaft No. 13,	Old Forge township,	" "
55	Law Shaft,	Pittston township,	" "
56	Stark Shaft,	Lackawanna township.	" "
57	No. 2 Breaker,	Pittston township,	" "
58	Carbon Hill Shaft,	Old Forge township,	" "
59	New Shaft, Lackawanna,	Old Forge township,	" "
60	Shaft No. 2,	Dunmore borough,	" "
61	Shaft No. 3,	" "	" "
62	Shaft No. 4,	" "	" "
63	Dunmore Breaker,	" "	" "
64	Dunmore Screens,	" "	" "

owners, operators, and officers, in the Eastern District of the Wyoming Coalfields, tion of Wayne and Susquehanna counties, State of Pennsylvania, for the year end-

COAL COMPANIES.

Name of General Mine Superintendents and Assistants.	Name of Mining Boss.	Name of Outside Foreman.	Number.
Hon. Thomas Waddell,	Elihu Smith,	William Mitchell,	1
John M. Robertson, assistant,	Charles Aikman,	W. E. Frisbie,	2
Joseph Cool,	David W. Evans,	George Ash,	3
A. Morris,	J. Abbott,	George R. Smith,	4
S. B. Bennett,	Thomas Watkins,	P. O. Boyle,	5
S. B. Bennett,	Thomas Watkins,	G. H. Tench,	6
Daniel Edwards,	Frederick Burkert,	John J. Powell,	7
S. B. Bennett,	Adam John,	Robert Jaques,	8
S. B. Bennett,	William Neal,	Jesse Weaver,	9
Frederick Mercer,	A. Reese, Henry Chapman, asst.	A. G. Mason, J. W. McCabe, asst	10
R. T. Bliss,	Thomas Smiles,	R. T. Bliss,	11
Evan J. Evans,	Evan J. Evans,	W. G. Evans,	12
S. N. Stetler,	J. R. Lewis,	J. S. Jenkins,	13
Samuel Hines, assisted by W. E. Colbourne,	Joseph Davis,	William B. Williams,	14
Hon. Thomas Phillips,	Joseph D. Davis,	J. D. Caryl,	15
Hon. Thomas Phillips,	Benjamin Reese,	M. L. Coyne,	16
William Connell,	W. F. Courtwright,	John Biglin,	17
William Connell,	Thomas L. Jones,	Robert Penman,	18
A. B. Stevens,	Samuel T. Jones,	Patrick Judge,	19
William T. Smith,	J. H. Powell,	D. P. Brooks,	20
Reese G. Brooks,	James R. James,	Thomas D. Bevan,	21
Reese G. Brooks,	John Loverlng,	Walter Hussey,	22
John L. Lawrence,	Reese R. Griffiths,	Henry Hess,	23
O. S. Johnson,	Daniel Bradley,	John L. Lawrence,	24
Robert Reeves,	Richard D. Roberts,	W. S. Boyd,	25
William H. Richmond,	William Andrews,		26
C. D. Simpson,	Patrick Riley,	George Weiland,	27
J. J. Jermyn,	P. H. Mongan,	J. S. Fahringer,	28
O. S. Johnson,	Joseph D. Lloyd,	John Knight,	29
Thomas Battle,			30
Thomas Battle,	Thomas Battle,	David Stearns,	31
John H. Hosie,	Thomas Mooney,	William Young,	32
Edward Jones,	John Probst,	Alexander Craig,	33
Samuel Hines, assisted by W. E. Colbourne,	James M. Eaton,	John W. Eaton,	34
F. C. Denlnney, Jr.,	Alexander Aikman,	William Walker,	35
Henry J. Brennan,	Alexander McAa,	A. R. Reed,	36
	D. W. Williams,	Paul Burton,	37
	Henry J. Brennan,	Henry J. Brennan,	38

COAL COMPANY.

William Law,	Henry Jopling,	John Glenn,	39
" "	William Reynolds,	Loftus Campbell,	40
" "	Benjamin Harding,	Loftus Campbell,	41
Andrew Bryden,	Benjamin Harding,	Loftus Campbell,	42
William Law,	William Reid,	John Porteous,	43
Andrew Bryden,	James Watson,	Samuel McDowell,	44
" "	Phillip McCabe,	James Delaney,	45
William Law,	Samuel Bennett,	Thomas Hastie,	46
Andrew Bryden,	Alexander Thompson,	Hugh Fergusson,	47
" "	Alexander Thompson,	Dathan Morse,	48
" "	Alexander Thompson,	Dathan Morse,	49
" "	Wm. Abbott and Jno. M. Lewis,	Cuthbert Snowden and Henry Searls,	50
" "	Adam Harkness,	Cuthbert Snowden,	51
" "	Jas. A. Bryden & Alex. Bryden,	Anthony Horan and William Anderson,	52
William Law,	Robert McMillan,	Thomas M. Martin,	53
" "	Thomas Weir,	George M. Snyder,	54
" "	John Allen,	George M. Snyder,	55
" "	Alexander Laird,	J. H. Stilwell,	56
Richard Stillwell,		Thomas Rendle,	57
William Law,	John B. Law,	John B. Law,	58
" "	John B. Law,	John B. Law,	59
James Young,	John Moffit,	John W. Marshall,	60
" "	P. H. O'Hora,	William Jennings,	61
" "	P. H. O'Hora,	William Jennings,	62
Richard Stilwell,		Earl Bishop,	63
" "		Peter List,	64

TABLE No. 5—

DELAWARE, LACKAWANNA AND

Number.	Name of Coal Mine or Colliery.	Where located.	By whom operated.
65	Pyne Shaft,	Lackawanna township,	Del., Lack'a, & Western R. R. Co.,
66	Taylor Shaft and Drift,	" "	W. R. Storrs, general coal agent,
67	Archbald Shaft,	" "	" "
68	Sloan Shaft,	" "	" "
69	Continental Shaft,	" "	" "
70	Hampton Shaft,	" "	" "
71	Dodge Shaft,	" "	" "
72	Scranton Coal Co.'s Slope,	" "	" "
73	Bellevue Shaft,	" "	" "
74	Bellevue Slope,	" "	" "
75	Oxford Shaft,	5th ward, city of Scranton,	" "
76	Central Shaft,	15th " " "	" "
77	Hyde Park Shaft,	5th " " "	" "
78	Diamond No. 2 Shaft, E. F. and G. Seam,	21st " " "	" "
79	Diamond No. 2 Slope,	21st " " "	" "
80	Tripp's Slope,	21st " " "	" "
81	Brisbin Shaft,	21st " " "	" "
82	Cayuga Shaft,	3d " " "	" "
83	Jermyn No. 3 Shaft,	13th " " "	" "
84	Storrs' Shaft,	Dickson city borough,	" "

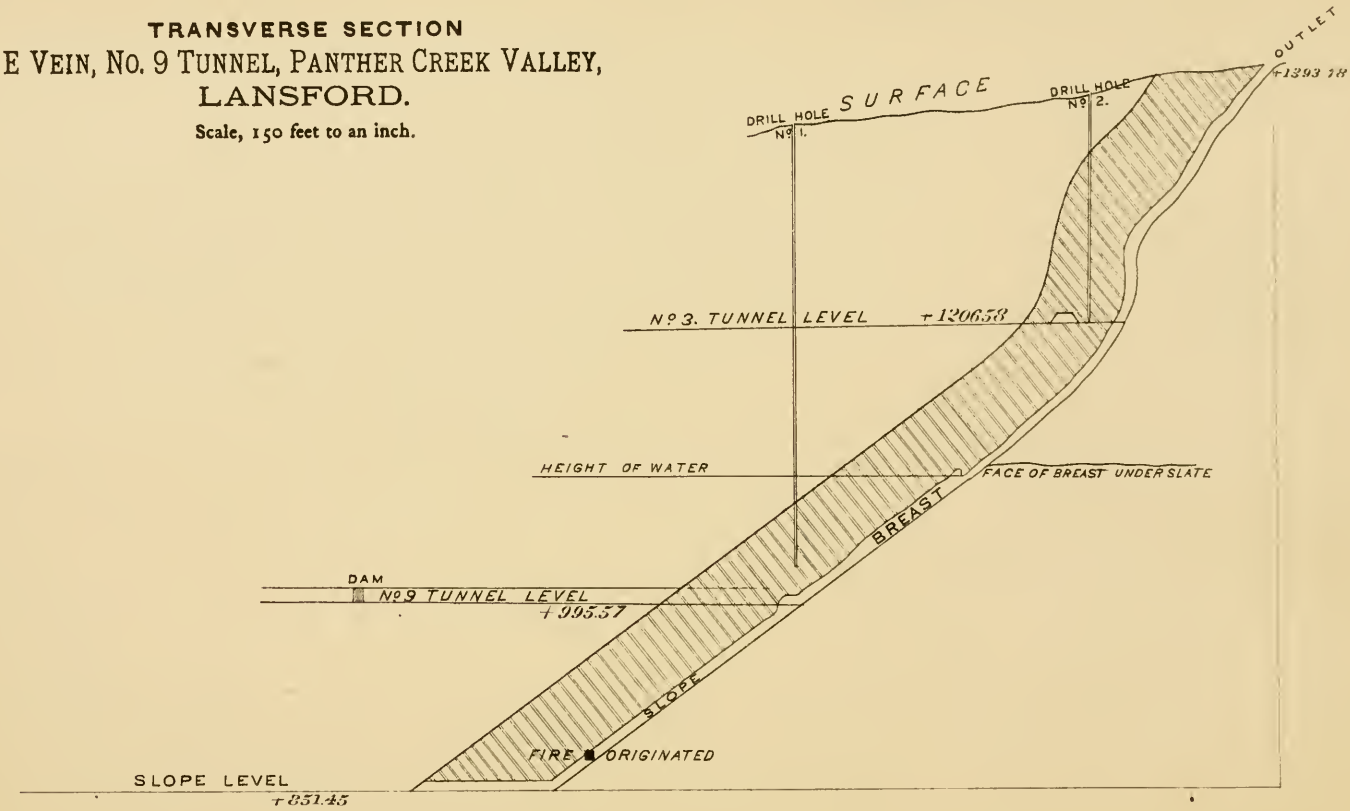
DELAWARE AND HUDSON

85	Jermyn No. 3 Shaft,	13th ward, city of Scranton,	Delaware and Hudson Canal Co.,
86	Von Storch Shaft and Slope,	13th and 2d ward, city of Scranton,	A. H. Vandling, general superintendent coal department,
87	Leggett's Creek Shaft,	1st ward, city of Scranton,	" " "
88	Marvine Shaft,	1st " " "	" " "
89	Eddy Creek Shaft,	Olyphant borough,	" " "
90	Olyphant No. 2 Shaft,	" "	" " "
91	Grassey Island Shaft,	" "	" " "
92	White Oak Mines,	Archbald borough,	" " "
93	Jermyn No. 1 Shaft,	Jermyn borough,	" " "
94	Jermyn No. 2 Slope,	" "	" " "
95	Powderly Slope,	Carbondale township,	" " "
96	No. 1 Shaft,	Carbondale city,	" " "
97	No. 3 Shaft,	" "	" " "
98	Coal Brook Mines,	" "	" " "
99	Racket Brook Breaker,	Carbondale township,	" " "

TRANSVERSE SECTION

E VEIN, NO. 9 TUNNEL, PANTHER CREEK VALLEY, LANSFORD.

Scale, 150 feet to an inch.



Continued.

WESTERN RAILROAD COMPANY.

Name of General Mine Superintendents and Assistants.	Name of Mining Boss.	Name of Outside Foreman.	Number.
Benj. Hughes, gen. inside sup't,	John L. Lewis,	Adam Rheinhart,	65
Thos. D. Davies, ass't "	Morgan Harris,	John P. Cooper,	66
W. H. Storrs, gen. outside sup't,	Elijah Dagger,	John Fern,	67
" "	John T. Williams,	John Reese,	68
" "	William Douse,	James F. Green,	69
" "	Thomas Carson,	B. C. Green,	70
" "	Edward James,	Edward E. Thomas,	71
" "	Henry P. Davies,	John H. Hoffman,	72
" "	John Hale,	John M. Acker,	73
" "	James A. Evens,	" "	74
" "	" "	Robert Ruthven,	75
" "	Lewis Roberts,	John A. Mears,	76
" "	David W. Mosier,	Robert Ruthven,	77
" "	Thos. Eynon and Reese T. Evans	Daniel Langstaff,	78
" "	Daniel Phillips,	" "	79
" "	John Flynn,	" "	80
" "	Frank Zimmerman,	D. E. Bell,	81
" "	Thomas Watkins,	Jacob Bowman,	82
" "	John Von Bergen,	George Griffin,	83
" "	William D. Reese,	John A. Mears,	84

CANAL COMPANY.

Andrew Nicol, A. B. Nicol, assistant,	John Von Bergen,	George Griffin,	85
J. M. Chittenden, outside sup't,	E. D. Jones,	Charles W. Ziegler,	86
" "	Finlay Ross,	B. B. Atherton,	87
" "	Joseph V. Birtley,	J. L. Atherton,	88
" "	Hugh Jones,	William Bell,	89
" "	Hugh Jones,	William Bell,	90
" "	Andrew Patten and Jas. Vessle,	J. G. Bell,	91
" "	James Nicol,	Thomas Law,	92
" "	Joseph Tennis,	T. C. Griffin,	93
" "	Andrew P. Patten,	Thomas Hunter,	94
" "	Pumping out water, preparing	for work,	95
" "	John Waterfield,	William Bowers,	96
" "	John Hughes,	" "	97
" "	Wm. McMyne and Pat. McCabe,	" "	98
J. M. Chittenden,		W. P. E. Morss,	99

TABLE No. 6.—*Showing the condition of ventilation in all the collieries in the East Lackawanna and a portion of Wayne and Susquehanna counties,*

Number.	NAME OF COLLIERIES.	Local name, number, or letter of each split of air.	Mode of ventilation.	DIMEN. OF FAN		Revolution of fan per minute.	Dimensions or area of furnace grate.
				Diameter in feet.	Width of face in feet.		
1	Everhart Slope,	Dip Gangway,	Natural,				
2	Do.	Upper Level,	"				
3	Eagle Shaft,	No. 1,	Fan,	18	4	60	
4	Do.	No. 2,					
5	Do.	No. 3,					
6	Do.	No. 4,					
7	Tompkins Shaft,	No. 1, top and bottom,	Fan,	6	2½	135	
8	Do.	No. 2, Kidder,					
9	Fairmount Shaft,	Shaft Gangway East,	Fan,	12	3⅓	65	
10	Do.	Tunnel Gangway West,					
11	Seneca Slope,	North Split,	Fan,	6	2½	200	
12	Do.	South Split,					
13	Twin Shaft,	Split No. 1,	Fan,	14	5	76	
14	Do.	Split No. 2,					
15	Beaver Slope,		Natural,				
16	Butler Shaft,	No. 1 Split,	"				
17	Do.	No. 2 Split,	"				
18	Mosier Shaft,	No. 1 Split,	Fan,	14	4	60	
19	Do.	No. 2 Split,					
20	Heidelberg Shaft,	Marcy Seam East,	Fan,	20	6	35	
21	Do.	Marcy Seam West,					
22	Do.	Bottom Seam East,					
23	Phœnix Shaft,	No. 1 Split,	Fan,	15	5	60	
24	Do.	No. 2 Split,					
25	Columbia Tunnel,		Furnace,				20
26	Stetler Shaft,	A Split,	Fan,	12	3½	115	
27	Do.	B Split,					
28	Hillside Shaft,	South-East Heading,	Fan,	14	4	90	
29	Do.	West Heading,					
30	Spring Brook Tunnel,	O'Holeran's Heading,	Fan,	12	4	60	
31	Do. do.	Armfield's Heading,					
32	Greenwood Mines,	Slope No. 1,	Two furnaces,			82	
33	Do.	No. 11 Drift,	Furnace,			41	
34	Do.	No. 8 Drift,	"			41	
35	Do.	Nos. 4 and 5 Drift,	Natural,				
36	Do.	Shaft No. 1,	Fan,	14	4		
37	Sibley Shaft,		"	15	4	95	
38	National Shaft and Slope,	East Gangway,	Furnace,				6x6
39	Do. do.	West Gangway,	"				
40	Meadow Brook Tunnel,	Upper Counter,	"				8x8
41	Do. do.	Lower Gangway,	"				8x6
42	Meadow Brook Shaft,	Two Lower Gangways East,	Fan,	14	3½	100	
43	Do. do.	East Gangway from foot of counter,					
44	Do. do.	Counters at Head of Plane,					
45	Bridge Slope,	Rock Vein,	Fan,	14	3½	72	
46	Do.	G or 14-Foot Vein,					
47	Mt. Pleasant Slope,	New Air Bridge,	Fan,	14	4	70	
48	Do.	John Daw's Gangway,					
49	Do.	Tunnel Split,					
50	Capouse Shaft,	C Split,	Fan,	20	5	65	
51	Do.	E Split,	"	9½	2′6″	105	
52	Do.	F Split,					
53	Do.	G Split,					
54	Do.	I Split,					
55	Do.	K Split,					
56	Pine Brook Shaft,	A Split,	Double fan,	17½	4	55	
57	Do.	B Split,		17½			
58	Do.	Clark Vein Split,					
59	Fair Lawn Slope,	Clark Vein,	Fan,	12	3	115	
60	Green Ridge Slope,	No. 1, South Heading,	"	12	3	118	
61	Do.	No. 2, South Heading,					
62	Do.	No. 3, South Heading,					
63	Do.	No. 4, North Heading,					

ern (or Scranton) District of Luzerne and Carbon counties, now including all of Pennsylvania, for year ending 31st day of December, A. D. 1882.

Amount of Ventilation per Minute.			Condition of ventilation.	Height of heated columns of air.	Number of persons working in each split.	Dimension or area of intake in feet.	Dimensions or area of out or upcast in feet.	Velocity of air at intake.	Dimensions or area of place where air was measured.	Velocity of air at face of workings.	Dimensions or area of place where air was measured.	Velocity of air at out or upcast.	Dimensions or area of place where air was measured.	Number.
At intake.	At face of workings.	At outlet or upcast.												
19,099	9,409	19 915	Good,		40	96	90	200	8x12	147	8x8	221	9x10	1
9 215	6.305	9,021	"		24	72	90	128	8x 9	112	7x8	100	9x10	2
44.240	15,080		"			192		230	192					3
24,000			"		20									4
10.500			"		16									5
8,640		43,800	"		6		60					830	60	6
16,000			Fair,		37	40		400	40					7
16,000	15.275	17,250	"		24		50					345	50	8
24,000	10.750		Good,		60	156		154	156					9
	9,750	22,500	"		56		60					375	60	10
16,500	14.500		"		50									11
	5,500	22,000	"		20									12
62,490	29,405		"		40	180		801	78	326	90			13
	23 495	69 680	"		50		100			587	40	1 106	63	14
6 800	2 300	7.500	"		23	48	36	142	48	26	84	208	36	15
40.500	10,000		"		32	68		600	68	250	40			16
	24 000	41.300	"		51		130			400	60	516	80	17
25,200	20,300	26 100	"		39	120		280	90	290	70	290	90	18
23 400	19.800	24,000	"		48		66	260	90	220	90	1,000	24	19
15,680	16.200	20,290	"		56	360		158	99	405	40			20
13 440	10,290	15,400	"		40			153	88	105	98			21
18 000	18,000	21,150	"		10		144	300	60	200	90	395	144	22
40,940	19,300		"		26	100		409	100					23
	11.800	43,500	"		37		70					621	70	24
4,012	3 933	3,863	Fair,		28	42	36	95	42			107	36	25
88,000	32.600		Good,		40	280		314	280					26
	22,400	90,000	"		40		90					1,000	90	27
19.180	16 560	23.430	"		80	220		161	220			427	100	28
16 320	13,400	19,260	"		40		100							29
48,000	17,000		"		36	60	84	363	132	354	48			30
	26.000	48,400	"		85	72				433	60	576	84	31
24,000	19 000	25,000	"	50	70	48	80		48		36		80	32
9,000	6,000	9,500	"	44	51	36	64		36		30		64	33
11 000	8,000	11 600	"	39	58	42	64		42		32		64	34
40,000	38,100	40,150	Taking	out	pill	ars.								35
														36
24,720	14,070	25.390	Good,		90	250	70	99	250			363	70	37
30,960	14,840	16,440	"	136	30	117		344	90	212	70	548	30	38
	14,310	15,120	"		48		36			160	90	252	60	39
20 160	17.640	21 870	"	50	50	48		336	60	210	84	243	90	40
21,240	18,450	21,840	"	60	65	72		236	90	205	90	359	60	41
	16,960		"		50					212	80			42
35.880	17,440		"		50	63		598	60	218	80			43
11.120	23.760	63 360	"		80	168	54	556	20	198	120	880	72	44
15 120						70		252	60					
35,900	20.860	37.750	"		67	50	50	712	50	352	59	755	50	45
30,180	27 225	31.050	"		49	77	98	391	77	432	63	317	98	46
39 840	12,400		"		55	64		622	64	194	64			47
21,500	20,400		"		57			430	50	408	50			48
	7,000	42.180	"		49		70			194	36	602	70	49
27,400	24,400	29 200	"		50	300		460	266	350	69			50
24,000	21,920	24.200	"		50					270	82			51
18 640	17.600	19 640	"		50					260	67			52
18,920	18.620	21,000	"		50					220	84			53
17.240	16,400	18,000	"		50					280	58			54
16,240	14,000	17,400	"		50		160			160	87	630	205	55
35,080	35.080	35,080	"		36	140		575	328	240	145			56
77,700	77 700	77,700	"		26					220	359			57
76,000	75.000	86,400	"				153			300	250	575	344	58
34 500	12,100	31,580	Fair,		73	72	80	410	84	100	120	113	87	59
10,670	8,769	10.670	Good,		48	84								60
11,050	8,640	11,050	"		50									61
12,600	9 860	12.600	"		53									62
14,500	11,060	14,500	"		60		63							63

TABLE No. 6—

Number.	NAME OF THE COLLIERIES.	Local name, number, or letter of each split of air.	Mode of ventilation.	DIMEN. OF FAN. Diameter in feet.	DIMEN. OF FAN. Width of face in feet.	Revolution of fan per minute.	Dimensions or area of furnace.
64	Lucas Shaft,		Fan,	12	3½	50	
65	Elk Hill Tunnel,		Furnace,				6x4
66	Pancoast Shaft,		"				20
67	Do. Slope,		Fan,	15	3	60	
68	Throop Shaft,		"	20	5	24	
69	Lackawanna Coal Co. Shaft,	East Split, West Split,	"	20	5		
70	Filer & Levy's Shaft,	South & West Headings	Furnace,				6x6
71	Do. Slope,	South Heading,	Fan,	14	4½	90	
72	Do. do.	South foot of Inside,	"				
73	Pierce Coal Company,		"	16	4½	90	
74	Eaton Slope and Tunnel,		"	12	3	85	
75	Erie Shaft,	North Side,	"	18	4	57	
76	Do.	South Side,	"				
77	Keystone Tunnel,		Furnace,				8x8
78	Forest City Tunnel,	West Heading,	"				8x10
79	Belmont Colliery,		Fan,	6	3	320	

PENNSYLVANIA

80	Slope No. 2,	East,	Steam,				
81	Do. 2,	West,	"				
82	Shaft No. 6,	A,	Fan,	17½	5	65	
83	Do. 6,	B,	Steam,				
84	Do. 6,	C,	"				
85	Do. 5,	A,	Fan,	17½	5	65	
86	Do. 5,	B,	"	17½	5	65	
87	Do. 5,	C,	"	17½	5	65	
88	Do. 11,	A,	"	17½	5	60	
89	Do. 11,	B,	"	17½	5	60	
90	Do. 11,	C,	"	17½	5	60	
91	Do. 7,	East,	"	17½	5	84	
92	Do. 7,	West,	"	17½	5	84	
93	Slope No. 4,	A,	"	17½	5	60	
94	Do. 4,	B,	Natural,				
95	Do. 4,	C,	"				
96	Shaft No. 4,	14-ft. vein, East,	Fan,				
97	Do. 4,	14-ft. vein, West,	"				
98	Do. 4,	Marcy vein, East,	"	17	4½	68	
99	Do. 4,	Marcy vein, West,	"	17	4½	68	
100	Tunnel No. 1,	A,	Steam,				
101	Slope No. 6,	West,	Furnace,				5x5
102	Shaft No. 1,	East,	Fan,	17½	5	60	
103	Do. 1,	West,	"	17½	5	60	
104	Do. 8,	East,	"	17½	5	60	
105	Do. 8,	West,	"	17½	5	60	
106	Do. 10 7 and 14-ft. veins,	A,	"	17½	5	60	
107	Do. 10, 7 and 14-ft. veins,	B,	"	17½	5	60	
108	Do. 10 Marcy vein,	A,	"	17½	5	70	
109	Do. 10, do.	B,	"	17½	5	70	
110	Do. 10, do.	C,	"	17½	5	70	
111	Do. 10, do.	D,	"	17½	5	70	
112	Do. 10, do.	E,	"	17½	5	70	
113	Do. 9,	A,	"	17½	5	60	
114	Do. 9,	B,	"	17½	5	60	
115	Do. 9,	C,	"	17½	5	60	
116	Barnum Shaft No. 1, 7-ft. vein,	East,	"	17½	5	50	
117	Do. do. do.	West,	"	17½	5	50	
118	Do. do. 14-ft. vein,	East,	"	17½	5	50	
119	Do. do. do.	West,	"	17½	5	50	
120	Do. No. 2, 7-ft. vein,	East,	"	17½	5	50	
121	Do. No. 2, 7 do.	West,	"	17½	5	50	
122	Do. No. 2, 14 do.	East,	"	17½	5	50	
123	Do. No. 2, 14 do.	West,	"	17½	5	50	
124	No. 12,	East,	Fan at shaft,	17½	5	66	
125	No. 12,	West,				66	

Continued.

Amount of Ventilation per minute.			Condition of ventilation.	Height of heated columns of air.	Number of persons working in each split.	Dimensions or area of intake in feet.		Dimensions or area of out or upcast in feet.		Velocity of air at intake.	Dimensions or area of place where air was measured.	Velocity of air at face of workings.	Dimensions or area of place where air was measured.	Velocity of air at out or upcast.	Dimensions or area of place where air was measured.	Number.
At intake.	At face of workings.	At outlet or upcast.														
23,192	5,598	23 290	. . .	. .	40	140		85	.		. .	. . .	. . .	.	. .	64
17,150	15,500	17,400	Fair, .		70	42		36	408		42	. . .	. . .	483	36	65
10 800	10,080	11,120	"	75	66	120		44	90		120	. . .	. . .	254	. .	66
18 620	17,550	20,000	Good,	. . .	69	84		50	222		. . . .	. .	. . .	400	50	67
60,000	58 000	61.000	"	. .	.	106		. .	.		. .	. .	. . .	.	.	68
18,200	4 740	18,200	"		20	140		100	260		70	. .	. . .	182	100	69
13,450	11.200	13,650	Fair, .	64	142	220		50	61		.	. . .	. .	273	50	70
20,500	7.500	.	. . .	.	.	.		. .	.		.	. . .	. . .	.	. .	71
.	9,300	20.850	Good,	. . .	66	. .		64	285		72	.	. .	325	64	72
39,120	22 460	40,820	"	. . .	230	50		. .	782		. . .	267	84	622	64	73
40,850	31,600	54,850	"	. . .	174	42		160	972		. .	875	.	343	160	74
35,000	16 000	. . . .	"	. . .	32	58½		.	417		84	333	48	.		75
35,000	26,000	. . . .	"		99	84		100	603		. .	542	48	900	10x10	76
. .	. . .	.	"		90	Not in use			in	1882	. .	.	.	. . .		77
17,200	9,400	18.500	"		120	30	7x10	8x8		245	7x10	196	48	289	8x 8	78
16,500	6,600	18,400	"		. .	85	112	64		145	112	157	42	287	8x 8	79

COAL COMPANY.

10,260	10,020	.	Good,		32	9x10	7½x12	95	108	167	69	.	. . . .	80
15,860	14 100	34 200	"	377	48	"	"	266	60	141	100	380	90	81
21,000	9,100	12,450	"	.	44	9½x10	4½x 9½	600	35	202	45	356	35	82
12,300	9,600	18 000	"	377	34	"	7½x12	114	108	178	54	188	96	83
12 170	10 100	15 600	"	377	20	"	"	203	60	168	60	260	60	84
17,080	10.500	21 500	"	. . .	18	"	4½x 9½	237	72	300	35	291	74	85
11,450	11,025	13,500	"	. .	37	"	"	636	18	459	24	750	18	86
9.550	12,200	12,000	"	. . .	43	"	"	265	36	222	55	218	55	87
17.250	12,400	21,300	"	. . .	5	"	3½x10	431	40	413	30	523	45	88
12,250	13 000	15 200	"	. . .	13	"	"	350	35	371	35	543	28	89
16.570	13,520	18 310	"	. . .	15	"	"	276	60	451	30	523	35	90
15.570	13 300		"	. . .	36	"	10x14	173	90	190	70	.	.	91
22,400	16.500	40 000	"	. .	77	"	"	280	80	206	80	800	50	92
18.480	13.750	19.000	"	. . .	49	7x11	3½x10	240	77	275	50	475	40	93
10 395	10.200	15,939	"	. .	52	10x12	6x 6	297	35	255	40	693	23	94
6,000	4 800	6,000	"	. . .	14	6x 8½	5x24	120	50	40	120	50	120	95
9,800	7,560	10,000	"	. .	20	9½x10	5x 9½	140	70	108	70	154	65	96
8,965	6,435	9,600	"	.	18	"	"	163	55	99	65	160	60	97
10,532	9,425	14.000	"	. . .	43	"	"	162	65	145	65	370	78	98
11 808	11,520	14 860	"		50	"	"	164	72	144	80			99
21.600	14 300	24 600	"	150	84	6x 8	7x10	360	60	286	50	351	70	100
8.760	7 500	9,360	"	110	46	9½x10	2⅜x 9½	695	45	250	30	288	33	101
10,600	9,000	26,880	"	. .	29	10x12	7x10	303	33	180	50	320	84	102
14.280	13 370		"	. . .	23	"	"	185	77	227	50			103
13 000	11.000	31,560	"	. . .	54	9⅜x13	"	173	75	220	50	263	120	104
17,200	16,933		"	. .	49	"	"	264	65	338	50			105
23.100	12,300	25.100	"	. . .	30	10x10	6x12	308	75	246	50	534	47	106
17,500	9,800	19 700	"	. . .	18	5x 6	"	500	35	245	40	394	50	107
18 100	16.500		"	. . .	25	10x10	"	362	50	550	30	900	84	108
12.600	9.200		"	. . .	12	"	"	420	30	368	25	900	84	109
16,500	12.240	75,600	"	. .	32	"	"	500	33	310	40	900	84	100
12 800	10,900		"	. . .	32	"	"	256	50	218	50	900	84	101
13 000	13,500		"	. .	28	"	"	200	65	300	45	900	84	112
23.760	19.260		"	. . .	15	6x 6	6x10	660	36	214	90			113
18.000	12 975	68,000	"	. . .	50	10x12	"	240	75	173	75	810	84	114
19,100	15 750		"	. . .	49	6x 8½	"	382	50	202	78			115
21,170	12,600	48,000	"	. .	48	10x12	8½x12	290	73	210	60	.	. .	116
19 720	15 340		"	. . .	48	"	"	290	68	240	66	480	100	117
20,988	17.550	42,000	"	. . .	44	"	"	318	66	270	65	.	. .	118
18.970	15.600		"	. . .	48	"	"	271	70	260	60	420	100	119
13,986	11.466		"	. . .	22	10x12	8x10	222	63	182	63	.	. .	120
18,018	13 482	47,600	"	. . .	27	"	"	286	63	214	63	680	70	121
13 002	9,960		"	. .	23	"	"	197	66	166	60	.	.	122
14 980	11 270	42,390	"	. . .	23	"	"	214	70	161	70	471	90	123
8,000	6,480		"	. . .	51	"	5½x12	160	50	144	45	.	. .	124
10,800	8 500	21,000	"	. . .	53	"	"	180	60	170	50	350	60	125

TABLE No. 6—

PENNYLVANIA COAL

Number.	Name of Collieries.	Local name, number, or letter of each split of air.	Mode of ventilation.	Dimen of Fan. Diameter in feet.	Width of face in feet.	Revolution of fan per minute.	Dimensions or area of furnace.
126	Shaft, No. 13,	East,	Fan,	17½	5	60	
127	Do.	West,	"	17½	5	60	
128	Law Shaft,	East,	"	17½	5	66	
129	Do.	West,	"	17½		66	
130	Do.	Slope,	"	17½	5	66	
131	Stark Shaft,	Old Slope,	Steam,				
132	Do.	New Slope,	Fan at shaft	No.	13,		
133	Shaft No. 2, Dunmore,	Top Vein,	Furnace,				4½x6
134	Do.	Middle Vein,	"				4 x6
135	Do.	Bottom Vein,	Natural,				
136	Shaft No. 3,	Top,	Fan,	17½	5	70	
137	Do.	Middle,	"	17½	5	70	
138	Do.	Bottom,	"	17½	5	70	
139	Shaft No. 4,	Top,	"	17½	5	70	
140	Do.	Botton, S. W. side,	"	17½	5	70	
141	Do.	Bottom, N. E. side,	"	17½	5	70	

DELAWARE, LACKAWANNA AND

142	Pyne Shaft,	David Powell,	Fan,	12	4	135	
143	Do.	Frank Harres,	"	12	4	135	
144	Do.	William Riddle,	"	12	4	135	
145	Do.	James Lawler,	"	12	4	135	
146	Do.	William Lander,	"	12	4	135	
147	Do.	David Day,	"	12	4	135	
148	Do.	Thomas Griffith,	"	12	4	135	
149	Taylorville Shaft,	J,	Two fans,	14	4	127	
150	Do.	R,	"	14	4	127	
151	Do.	B,	"	14	4	127	
152	Do.	G,	"	14	4	127	
153	Do.	A,	"	14	4	127	
154	Do.	Clark Vein and Little Vein above,	"	14	4	127	
155	Archbald Shaft,	Clark A,	Fan,	12	3½	100	
156	Do.	Clark C and D,	"	12	3½	100	
157	Do.	Clark E,	"	12	3½	100	
158	Do.	Clark F,	"	12	3½	100	
159	Do.	Rock Vein,	"	12	3½	100	
160	Do.	Barn Vein,	"	12	3½	100	
161	Sloan Shaft,	J and H,	"	12	3½	115	
162	Do.	N J M,	"	12	3½	115	
163	Do.	L,	"	12	3½	115	
164	Do.	Rock Vein,	"	12	3½	115	
165	Do.	K,	"	12	3½	115	
166	Do.	William L. James,	"	12	3½	115	
167	Continental Shaft,	William J. Hughes,	"	12	3½	128	
168	Do.	Thomas Williams,	"	12	3½	128	
169	Do.	Patrick Hogan,	"	12	3½	128	
170	Do.	Thomas L. Davies,	"	12	3½	128	
171	Do.	Charles Combs,	"	12	3½	128	
172	Taylorville Drift,	M Split,	"	12	3½	69	
173	Do.	Pump Split,	"	12	3½	69	
174	Hampton Shaft,	William J. Jones,	"	14	4	122	
175	Do.	William Hughes,	"	14	4	122	
176	Do.	Isaac Griffith,	"	14	4	122	
177	Do.	Rock Vein, west,	"	14	4	122	
178	Do.	John Griffith, east,	"	14	4	122	
179	Dodge Shaft,	B,	Two furnaces,				96
180	Do.	C,	"				96
181	Do.	E,	"				96
182	Do.	F,	"				96
183	Do.	R Y,	"				96
184	Do.	A,	"				96
185	Scranton Coal Company Slope,	A,	Fan,	14	4	121	
186	Do. Do.	B,	"	14	4	121	

Continued.

COMPANY—*Continued.*

Amount of Ventilation per Minute.			Condition of ventilation.	Height of heated columns of air.	Number of persons working in each split.	Dimensions or area of intake in feet.	Dimensions or area of out or upcast in feet.	Velocity of air at intake.	Dimensions or area of place where air was measured.	Velocity of air at face of workings.	Dimensions of area of place where air was measured.	Velocity of air at out or upcast.	Dimensions or area of place where air was measured.	Number.
At intake.	At face of workings.	At outlet or upcast.												
25,970	20,000	.	Good,	. .	29	10x12	6x12	371	70	400	50		. .	126
21,960	18 000	50,160	"	. . .	15	"	"	305	72	360	50	380	132	127
21,000	15,000		"		49	"	$5\frac{1}{2}$x12	300	70	250	60		. .	128
19,800	14,000	49.500	"	. . .	48	"	"	330	60	280	50	550	90	129
9,200	6.000	10,500	"		11	"	"	100	92	120	50	210	50	130
14.708	12.458	16,200	"	170	53	6x 9	10x10	204	72	250	50	200	81	131
11,230	10 214	10,800	"		57	6x $5\frac{3}{4}$	6x12	187	60	186	55	270	40	132
18.406	12,412	18,622	"	150	36	5x 6	10x10	219	84	206	60	372	50	133
15 230	11.259	15,605	"	60	56	12x16	8x 8	253	60	225	50	346	45	134
8, 870	6.445	8, 864	"	. . .	9	10x10	12x12	177	50	128	50	177	50	135
8,400	7,200	8,400	"	. .	21	5x12	10x10	140	60	120	60	140	60	136
9,000	8.400	9,000	"	. .	78	"	5x12	150	60	140	60	150	60	137
13,800	12 500	14,400	"	. . .	. . .	"	"	230	60	250	50	240	60	138
20.400	19.800	21.000	"	. . .	16	"	"	340	60	330	60	350	60	139
12 600	12.060	13, 800	"	. . .	66	$4\frac{1}{2}$x14	"	180	67	200	63	230	60	140
13 000	12, 500	13,200	"	. . .	35	5x10	"	260	50	250	50	220	60	141

WESTERN RAILROAD COMPANY.

. . .	23 562	. . . . .	Good,	. .	40	10x15	10x10	.	. .	320	66	. . .	. . . .	142
25.026	8.330	. . . . .	"	. . .	31	"	"	670	36	75	70	. . .	. . .	143
28,980	17.472	. . . . .	"	. . .	35	"	"	450	60	140	96	. .	. . . .	144
7,407	21,762		"	. . .	32	"	"	800	9	240	78		.	145
54.480	28,454	117, 832	"	. . .	51	"	"	420	120	310	82	1,120	104	146
13,780	12.690	16,896	"	.	31	"	"	225	52	230	47	150	88	147
69,440	6,194	5,520	"	. .	11	"	"	80	56	120	38	900	6	148
28.620	27.720	. . . . .	"	. . .	46	10x20	12x16	280	90	270	90	. . .	. . .	149
28,305	27.744	. . .	"	.	31	"	"	600	45	250	96	. . .	. . . .	150
34.680	30,520	. . . . .	"	.	37	"	"	250	120	300	90	. . .	. .	151
25,440	24,640		"	. . .	36	"	"	280	80	270	80		. .	152
20,256	16,880	160,448	"	. .	26	"	"	170	96	170	80	1,750	92	153
21,505	21.505	21,505	"	. .		"	"	440	48	440	48	440	48	154
. . . .	20.271	. . . .	"	. .	32	22x31	10x10		. .	192	87	. . .	. .	155
. .	16.274	. . . .	"	. . .	29	"	"		.	173	76		. .	156
45,540	15.765	. . . .	"	. . .	42	"	"	308	132	1,036	15		.	157
33.660	13.650	78.658	"	. . .	27	"	"	338	90	153	70	1,162	67	158
22.170	17,373	19,526	"	. . .	21	"	"	.	. . . .	512	32	1,500	13	159
6,025	6.025	6,025	"	. . .		"	"	.	. .	200	25	. .	. . .	160
44.160	17.040	. . . .	"	. .	42	10x16	10x10	304	128	318	48	. .	. . . .	161
45,080	13,710	. . . .	"	. . .	29	7x14	"	426	98	423	30	. . .	. . . .	162
. . . . .	11,760	. . . .	"	. .	12	"	. . . .	. . .	. .	457	24	.	. . . .	163
. . . . .	15 930	. .	"	. . .	18	"	. . . .	. . .	. . . .	256	54		.	164
. . . .	14.400	74,470	"	. . .	20	"	. . . .	. . .	. . .	364	36	650	110	165
.	7,920	17,320	"	.	16	"	.		. .	406	18	350	45	166
68.796	21,168	. .	"	. . .	32	10x21	10x12	515	126	255	72	. . .	.	167
31,320	19.074	. . . .	"	. . .	34	"	"	400	72	250	69	. . .	. . .	168
. . . .	20.405	. . . .	"	. . .	38	"	"	. . .	. .	225	77	. . .	. . . .	169
. . . .	22, 869	.	"	. .	32	"	"	. .	. . .	190	99		. .	170
.	11.682	104,370	"	. . .	26	"	"	.	. .	135	66	1,050	98	171
32,448	27.405	.	"	. . .	34	12x12	9x10	300	96	400	63		. .	172
9.650	7, 230	42 150	"	. .	4	"	"	350	25	200	30	1,400	30	173
11, 505	14 690	. . . .	"	. . .	58	9x17	6x10	135	65	185	65	. .	. .	174
9 744	15, 552	. . . . .	"	. . .	67	"	"	125	58	175	72	. . .	. . .	175
49, 020	8, 514	.	"	. . .	28	"	"	430	114	85	66		.	176
. . . . .	8,568	61.740	"	. . .	19	"	"	. .	. .	125	51	710	84	177
.	9.706	10, 982	"		9	"	"		. .	170	46	285	34	178
23, 460	13, 332	. . .	"	330	37	10x21	13x13	308	68	160	66		. .	179
13, 655	17, 028	. . . . .	"	. . .	39	"	"	308	39	226	78		. .	180
15,330	23, 775	.	"	. .	38	"	"	328	42	279	75			181
20.328	16.182	63 700	"	. .	15	"	"	270	66	221	62	609	100	182
24 129	18, 760	25, 824	"	.	28	"	"	347	63	241	67	507	48	183
28. 287	26.190	33, 516	"	. .	35	"	"	415	63	270	62	255	114	184
54,964	26,190	.	"	.	46	7x14	12x12	575	91	270	84	.	.	185
20,412	29,319	50,590	"	. . .	44	"	"	203	84	299	89	642	77	186

TABLE No. 6—

DELAWARE, LACKAWANNA AND

Number.	Name of Collieries.	Local name, number, or letter of each split of air.	Mode of ventilation.	Dimen of Fan. Diameter in feet.	Dimen of Fan. Width of face in feet.	Revolution of fan per minute.	Dimensions or area of furnace.
187	Scranton Coal Company Slope,	New County Vein,	Fan,	14	4	121	
188	Belleview Shaft,	J, C, and A,	"	14	4	100	
189	Do. do.	B,	"	14	4	100	
190	Do. do.	D,	"	14	4	100	
191	Do. do.	H,	"	14	4	100	
192	Do. Slope,	E and F,	"	14	4	100	
193	Do. do.	J, H, D,	"	14	4	100	
194	Do. do.	F, B,	"	14	4	100	
195	Central Shaft,	Elias Hughes,	2 fans,	12	3½	130	
196	Do.	Frank Mangan,	"	12	3½	130	
197	Do.	West Side,	"	12	3½	130	
198	Do.	Patrick Hart,	"	12	3½	130	
199	Do.	Thomas G. Jones,	"	12	3½	130	
200	Do.	William Davies,	"	12	3½	130	
201	Do.	John Langan,	"	12	3½	130	
202	Do.	Rock Vein,	"	12	3½	130	
203	Hyde Park Shaft,	James Moore,	2 Furnaces,				96
204	Do.	Henry Jones,	"				96
205	Do.	Lewis Mosier,	"				96
206	Do.	Richard F. Edwards,	"				96
207	Do.	James Compton,	"				96
208	Diamond, No. 2 Shaft, E. & F.,	No. 1,	1 fan,	14	4	100	
209	Do. do.	No. 2,	"	14	4	100	
210	Do. do. G vein,	David Richards,	"	14	4	100	
211	Do. do. do.	Morgan Morgans,	"	14	4	100	
212	Do. do. do.	Eliazar Evans,	"	14	4	100	
213	Do. do. do.	Joseph Hughes,	"	14	4	100	
214	Do. Slope, G vein,	Daniel C. Philips,	2 furnaces,				96
215	Do. do. do.	James Joseph,	"				96
216	Do. do. do.	Barn,	"				96
217	Tripp Slope,	John D. Jones,	1 fan,	14	4	100	
218	Do.	David Hughes,	"	14	4	100	
219	Brisbin Shaft,	John Watkins,	Fan,	12	3½	120	
220	Do.	Benjamin Williams,	"	12	3½	120	
221	Do.	Thomas Cowardine,	"	12	3½	120	
222	Do.	John H. Davies,	"	12	3½	120	
223	Do.	James Roberts,	"	12	3½	120	
224	Jermyn, No. 3 Shaft,	Burns,	"	20	5	78	
225	Do. do.	Pringle,	"	20	5	78	
226	Do. do.	Collins,	"	20	5	78	
227	Do. do.	Vickers,	"	20	5	78	
228	Do. do.	Powell,	"	20	5	78	
229	Cayuga Shaft,	William Humphrey,	"	12	3½	100	
230	Do.	Daniel Price,	"	12	3½	100	
231	Do.	John Stanton,	"	12	3½	100	

DELAWARE AND HUDSON

232	Von Storch Shaft and Slope,	Diamond Plane,	Fan,	20	5	80	
233	Do. do.	Diamond Rock,	"	17	4	90	
234	Do. 14 feet,	Foot Heading, No. 1,	"	17	4	90	
235	Do. do.	Foot Heading, No. 2,	"	17	4	90	
236	Do. do.	North Heading, No. 1,	"	17	4	90	
237	Do. Clark vein,	do. No. 2,	"	17	4	90	
238	Do. do.	do. No. 3,	"	17	4	90	
239	Do. do.	South Heading,	"	17	4	90	
240	Leggitt's Creek Shaft,	East, 14 feet, S. side,	"	20	5	80	
241	Do.	North,	"	20	5	80	
242	Do.	South,	"	20	5	80	
243	Do.	East-North,	"	20	5	80	
244	Do.	West,	"	20	5	80	
245	Do.	N. Diamond Vein,	"	20	5	80	
246	Do.	East,	"	20	5	80	
247	Marvine Shaft,	North, 14 foot,	"	20	5	80	
248	Do.	South,	"	20	5	80	

Continued.

WESTERN RAILROAD COMPANY—*Continued.*

Amount of Ventilation per Minute.			Condition of ventilation.	Height of heated column of air.	Number of persons working in each split.	Dimensions or area of intake in feet.	Dimensions or area of out or upcast in feet.	Velocity of air at intake.	Dimensions or area of place where air was measured.	Velocity of air at face of workings.	Dimensions or area of place where air was measured.	Velocity of air at out or upcast.	Dimensions or area of place where air was measured.	Number.
At intake.	At face of workings.	At outlet or upcast.												
. .	16 150	19,767	Good,	. . .	5	7x14	12x12	500	105	235	50	570	33	187
55,860	23,232	. . . . .	"	. . .	41	10x18	10x10	123	78	315	66		. . .	188
12,788	20,661	. . . .	"	. . .	11	"	"	210	90	248	72	. .	. .	189
22,500	18,104		"	.	27	"	"		. .	253	62			190
. .	18,648	87,125	"	. .	35	"	"	.	.	410	42	1 009	85	191
31,120	16,000		"	. . .	22	7x14	"	353	80	210	64	. .	.	192
21,196	23 920		"	. .	27	"	"	268	66	220	92		.	193
. . .	12, 815	70,560	"	. . .	49	"	"	. . .	. . .	192	55	760	90	194
. . . .	16,678	. . .	"	. . .	29	10x 9	10x10	. .	.	229	62	. .	. .	195
31,990	15,438	. . . .	"	. .	47	"	10x 9	423	70	209	62	. .	. . .	196
20,108	21 420	. . .	"	. .	29	"	"	423	44	215	84	. .	. . .	197
19,516	23,598		"	. . .	35	"	"	248	68	379	57		. .	198
20,152	20,026	42 846	"	. . .	36	"	"	384	48	235	62	549	74	199
12,048	12, 145	50, 381	"	. . .	12	"	"	470	44	310	35	578	83	200
21, 912	17, 794	45, 741	"	. . .	28	"	"	209	88	248	62	549	79	201
12, 060	12, 060	12, 060	"	. . .	5	"	"	297	36	297	36	297	36	202
17,316	10, 724	. . . . .	"	305	28	10x91	10x14	410	39	347	28	. . .	. . . .	203
24, 924	20, 150	. . .	"	305	49	"	"	367	62	279	65	. .	. . .	204
10, 060	9,408		"	305	30	"	"	245	36	255	32			205
13, 132	15,008	43.940	"	305	30	"	"	228	49	435	32	614	70	206
12, 911	13,400	43 241	"	305	48	"	"	507	24	297	40	532	77	207
47,390	21, 775	. .	"	. . .	38	10x14	10x13	650	70	850	25	.	. . . .	208
.	17,028	46,942	"	. . .	25	10x18	"	.	. .	750	22	940	49	209
46,440	27,588	. . . . .	"	. .	39	10x14	10x13	750	60	700	38	. . .	.	210
42,465	21, 696	.	"	. . .	38	"	"	720	57	1, 350	16		. .	211
. .	18, 126	63, 900	"	.	14	"	"	. . .	. .	305	53	1, 050	60	212
.	19, 270	27, 583	"	. . .	25	"	"	.	.	375	47	700	38	213
20,812	16, 573	12, 704	"	. . .	43	7x12	12x12	410	44	220	54	270	38	214
22, 336	18, 000	55, 510	"	. . .	44	"	"	340	86	210	72	770	70	215
17, 400	17 400	17, 400	"	185	. . .	"	"	.	. .	400	40	. .	.	216
19, 836	7, 480	.	"	.	49	6x10	10x13	305	58	145	40	. .		217
. . . .	8, 694	17, 370	"	. . .	47	"	"	.	. . .	165	42	350	45	218
. . . . .	20, 820	. . . .	"	. . .	46	10x16	10x 9	. . .	. . .	310	60	.	. .	219
.	15, 470	. . . .	"	. . .	42	"	"		. . .	180	70	. .	. .	220
38 640	24, 948	. . . .	"	. . .	43	"	"	450	80	380	63	. .	. . . .	221
15 470	25, 515	. .	"	. . .	29	"	"	180	70	370	63	.		222
54, 960	15, 246	118, 440	"	. . .	27	"	"	660	80	205	63	970	120	223
. . . .	16, 016	. . . . .	. . . .	. .	45	"	7x10	.	. . .	166	77		. .	224
. . . . .	24 276	. . . . .	. . . .	. .	48	"	"	. . .	. .	250	84	. .	. . . .	225
. . . . .	17, 576	. . . . .	. . . .	. .	42	"	"	521	106	211	70	. .	. .	226
. . . .	22, 248	. . . .	. . .	. .	43	"	"	578	71	271	72		.	227
. . . . .	21, 360	137, 772	. . . .	. .	47	"	"	463	42	169	89	1, 604	86	228
69, 819	18, 792	. . .	. . . . .	. . .	48	10x15	9x10	600	111	221	72		. .	229
. . .	20, 400	. . . .	. . . .	. . .	46	"	"	. . .	. . . .	232	75		. .	230
. . . .	19, 125	70, 720	. . . .	. .	49	"	"	. .	. . . .	215	75	863	80	231

CANAL COMPANY.

11, 400	9,600		. . . .	. .	49	200	180	190	60	200	48	. . .	. . . .	232
6, 100	5 400		. . . .	. . .	30	80	44	113	54	115	47	. .	. . . .	233
29, 800	13, 200		. . . .	. . .	49	80	44	496	60	264	50			234
. .	10, 400	141, 400	. . . .	. .	31	80	44		. .	385	27	982	144	235
13, 600	10, 200			. . .	48	80	44	226	60	255	40	. .	. . .	236
46, 800	11, 200		Good,	. . .	50	80	44	417	112	233	48	. . .	. . . .	237
. .	29, 100		"	. . .	32	80	44	.	. .	520	56	. .	. . . .	238
26 100	20, 300		"	. .	49	80	44	408	64	356	57	. . .	. . . .	239
12, 000	10, 530	. . . . .	"	. . .	30	140	110	. .	80	131	.	. . .	. . .	240
15 600	10, 000	. . . .	"	. . .	20	140	110	150	60	256	80	. . .	. . . .	241
16, 450	11, 820	. . . . .	"	. . .	38	140	110	260	70	337	39	. . .	.	242
15, 960	14, 200	. . . . .	"	. .	40	140	110	235	60	373	35	.		243
15, 170	15, 200	. . . . .	"	. .	30	140	110	266	59	389	38	1, 307	127	244
13, 000	11, 500	. . . .	"	. . .	33	140	110	257	65	302	31 38	. . .	.	245
12, 300	10, 100	166, 000	"	. . .	28	140	110	200 153	80	273	37	. . .	. . .	246
17, 720	12 375	. . . . .	"	. . .	26	140	110	492	36	206	69	. . .	. .	247
26, 109	23, 750	. . . . .	"	. . .	35	140	110	290	90	255	93	. . .	. . . .	248

TABLE No. 6—

DELAWARE AND HUDSON

Number.	NAME OF COLLIERIES.	Local name, number, or letter of each split of air.	Mode of ventilation.	DIMEN. OF FAN.		Revolutions of fan per minute.	Dimensions or area of furnace.
				Diameter in feet.	Width of face in feet.		
249	Marvine Shaft,	East,	Fan,	20	5	80	
250	Do.	West,	"	20	5	80	
251	Do.	Slope,	"	20	5	80	
252	Do.	Diamond,	"	20	5	80	
253	Olyphant, No. 2, Shaft,	North,	"	20	5	80	
254	Do. do.	East,	"	20	5	80	
255	Do. do.	South, No. 1,	"	20	5	80	
256	Do. do.	South, No. 2,	"	20	5	80	
257	Do. do.	West,	"	20	5	80	
258	Grassy Island Shaft,	South,	"	20	5	50	
259	Do. do.	Slope,	"	20	5	50	
260	Do. do.	North,	"	20	5	50	
261	White Oak Mines,	White Oak Tunnel,	Furnace,				64
262	Jermyn, No. 1, Shaft,	East,	Fan,	17	4	75	
263	Do. do.	Slope,	"	17	4	75	
264	Do. do.	West,	"	17	4	75	
265	Jermyn, No. 2, Slope,	Jermyn Slope,	Natural,				
266	No. 1 Shaft,	No. 1 Shaft,	Fan,	17	4	75	
267	Do.	No. 3 Shaft,	"	17	4	75	
268	No. 3 Shaft,	No. 3 Shaft,	"	17	4	100	
269	Do.	White Bridge Tunnel.	"	17	4	100	
270	Coal Brook Mines,	West, No. 1,	"	17	4	100	
271	Do. do.	West, No. 2,	"	17	4	100	
272	Do. do.	East, No. 1,	"	17	4	100	
273	Do. do.	East, No. 2,	"	17	4	100	

Continued.

CANAL COMPANY—*Continued.*

AMOUNT OF VENTILATION PER MINUTE.			Condition of ventilation.	Height of heated columns of air.	Number of persons working in each split.	Dimensions or area of intake in feet.	Dimensions or area of out or upcast in feet.	Velocity of air at intake.	Dimensions or area of place where air was measured.	Velocity of air at face of workings.	Dimensions or area of place where air was measured.	Velocity of air at out or upcast.	Dimensions or area of place where air was measured.	Number.
At intake.	At face of workings.	At outlet or upcast.												
21,000	15 220	. . . .	Good,	. . .	34	140	100	300	70	247	65	. .	. . . .	249
17 300	15 960	. . . .	"	. . .	47	140	100	335	60	175	87	. .	. . . .	250
20 100	16, 100		"	. . .	46	140	100	320	54	249	64		. .	251
15 275	10. 800	157,610	"	. .	46	140	100	254	60	180	60	1,576	100	252
21, 850	20, 050	.	"	. . .	34	280	100	312	70	417	48	. .	. . .	253
37 360	31 860	. .	"	. .	68	280	100	533	70	455	70	. . .	. . .	254
14 240	11 800	. . .	"	. . .	40	280	100	237	60	295	40	. .	. . . .	255
11 900	9. 800		"	.	24	280	100	297	40	272	36		. .	256
19, 900	15, 800	136, 860	"	. . .	25	280	100	355	56	329	48	1, 140	120	257
18, 200	10 800		"	. . .	70	190	154	505	56	257	42		. .	258
34, 000	23 240		"	. . .	60	190	154	485	70	479	48		.	259
30, 160	20, 800	85, 224	"	.	70	190	154	500	60	346	60	1, 012	84	260
18, 800	14. 200	33 400	Fair,	117	160	49	81	383	49	284	50	412	81	261
14 000	9, 000		Good,		40	235	196	200	70	200	45	. .		262
25, 000	18 400		"	. . .	40	235	196	307	84	383	48		.	263
46 080	22, 800	110 800	"	. . .	70	235	196	568	81	380	60	886	125	264
21, 140		20, 520	"	. . .	78	91	90	232	91	.		228	90	265
20 000	12 400		"	. . .	60	91	120	416	48	248	50			266
.	12, 960		"	. . .	60	91	120			334	40	950	94	267
.	10. 800		"	. . .	50	91	120	338	72	270	40			268
24 360	22 080	89 320	"	. . .	150	91	120			297	74	820	100	269
20. 000	18. 400	}	"	. .	75	181	96	333	60	340	54			270
16, 500	10 200	} 95 000	"	. .	50	181	96	172	96	217	47		. . .	271
26, 800	19, 400		"	.	75	181	96	496	54	334	58		. .	272
17, 200	13, 000	}	"	.	50	181	96	286	60	295	44	989	96	273

NOTE.—There are 75 fans, 22 furnaces, and 4 steam jets used in this district for ventilating mines, and there are 7 mines ventilated by natural means.

TABLE No. 7.—*Statistics connected with the working of coal mines and collieries in the Eastern district of Luzerne and Carbon counties, now including all of Lackawanna and a portion of Wayne and Susquehanna counties, Pennsylvania, for year ending 31st day of December, A. D. 1882.*

MISCELLANEOUS COAL COMPANIES.

NAMES OF COLLIERIES.	Dimensions of shaft.	Depth of shaft in feet.	Dimensions of slope in feet.	Length of slope in feet.	Angle of slope in degrees.	Length of planes outside in feet.	Angle of plane outside in degrees.	Length of plane inside in feet.	Angle of plane inside in degrees.	Dimensions of tunnels in feet.	Length of tunnel to coal in feet.	Number of breakers.	Number of screens and chutes.	What is the average width of chambers?	What is the average width of pillars?	What is the width of headings in feet?	What is the width of air-ways in feet?
Everhart slope,			8x12	131	30	80	25					1		24	15	10	14
Eagle shaft,	16x12	152	12x6	281	15	374	16½			10x7	90	1		24	14	10	12
Tompkins shaft,	10x14	180	12x5½	230	14							1		24	15	12 & 14	15
Fairmount shaft,	10x12	110	18x5½	330	10					6x6	275	1		24	16	18	18
*Seneca slope,												1					
Twin shaft,	9x16	235										1		30	18	12	12
†Beaver slope,			8x7	200	20												
Butler shaft,	9x16	100	6x8	110	14					7x9	90	1	1	26	16	16	20
Mosier shaft,		168						350	14			1		26	16	16	20
		124															
Heidelburg shaft,	12x42	345	7x14	448	25							1		25	21	12	12
Phœnix shaft,	8x 8 / 10x18	250 / 251										1		24	15	12	12
Columbia tunnel,								90	45	5⅛x5⅔	425	1		24	12	12	10
Stetler shaft,	10x28	211										1		27	15	12	14
Hillside shaft,	14x20	147						225 / 600	20 / 15			1		28	10	14	14
Spring Brook tunnel,						120 / 200	45 / 23	400 / 700	45 / 5	6x14 / 6x10	20 / 200	1		28 to 30	12 to 14	10 to 12	10 to 12
Greenwood tunnel,	11x28	185	7x14	1,200	10	550				6x15	120	1		30	12	14	14
Drift No. 8,	6x10									6x10	75			30	14	12	14
Drift No. 10,	6x12									6x12	100			30	15	14	14
Drift No. 11,	6x10									6x10	85			30	12	12	14
Sibley shaft,	10x26	195										1		30	12	12	12
National Shaft and Slope,	11x27	230	7x18	600	18½	120	18½	700	6			1		27	15	16	16
Meadow Brook Shaft and Tunnel,	12x21 / 6x14	155	7x 9	200	18½	180	18½	850	6	6x12	220	1		27	15	16	16
Bridge Slope,			6x14	885	12	50 / 250	18 / 25	750 / 430	2½ / 5			1		27	18	12	15

Mount Pleasant Slope,	. . . . .	. . . .	8x8	1,000	. . .	300	10	480 300	5½ 18	. . .	. . .	1	. .	30	15	12	14
Capouse Shaft,	10x30 10x26	355 355	. . .	. . . .	. . .	200	30	. . . .	. . .	. . .	. . .	1	. .	30	15	12	14
Pine Brook Shaft,	10x22 14 ft. clr	287 287	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	. . .	. . .	1	. .	26	20	12	14
Fair Lawn Slope,	. . . . .	. . . .	12x7	320 225	25 25	170	33	1,150 423	15	. . .	. . .	1 1	. . . .	30	16	16	16
Green Ridge Slope,	10x34	200	. . .	600	19	325	22	450 475	. . .	. . .	. . .	1	. .	30	15	11	14
‡Lucas Shaft,	10x30 10x14	62 150	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	. . .	. . .	1	. .	. . . .	. . . .	. . .	. . . .
Elk Hill Tunnel,	. . . . .	. . . .	. . .	. . . .	. . .	380	. . .	. . . .	. . .	6x7	50	1	. .	30	15	12	12
Pancoast Shaft and Slope,	10x20	60	7x12	900	10	. . . .	. . .	. . . .	. . .	. . .	. . .	1	. .	25	15	12	12
Throop Shaft,	11x24	264	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	. . .	. . .	1		27	15	10	10
Lackawanna Coal Company Shaft,	10x34	200	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	. . .	. . .	1	. .	30	15	10 to 12	14
Filer Shaft,	10x22	110	. . .	. . . .	. . .	. . . .	. . .	350	15	. . .	. .	1	.	30	12	12	12
Filer Slope,	. . . . .	. . . .	7x9	450	30	250	30	600	15	. . .	. . .	1	. .	30	12	12	12
Pierce Coal Company Tunnel,	. . . . .	. . . .	. . .	900	14	. . . .	. . .	. . . .	. . .	. . .	555	. .	. .	30	14	12	12
Eaton Slope and Tunnel,	. . . . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	6x6	50	1	. .	30	12	12	14
Erie Shaft,	10x30	177	. . .	. . . .	. . .	500 1,160	15	. . . .	. . .	. . .	. . .	1 1	. .	30	12	12	12
‖Keystone Tunnel,	. . . . .	. . . .	. .	. . . .	. .	. . . .	. . .	. . . .	. . .	. . .	. . .	1	. .	. . . .	. . . .	. . .	. . . .
Forest City Tunnel and Shaft,	. . . . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	450	15	7x8	300	. .	1	24	9	9	9
Belmont Tunnels,	8x10	21	. . .	. . . .	. . .	. . . .	. . .	. . . .	. .	6x6	45	1	. .	26	15	8	8
	29	5,566	. .	9,010	18	5,409	16	9,475	19	15	2,700	33	2	. . . .	. . . .	. . . .	. . . .

PENNSYLVANIA COAL COMPANY.

Slope No. 2,	. . . . .	. . . .	6x10	1,010	25	. . . .	. . .	120	8	. . .	. . .	. .	1	24	16	10	15
Shaft No. 6,	10x16	312	. . .	. . . .	. . .	. . . .	. .	275	9	. . .	. . .	1	. .	24	16	10	14
Shaft No. 5,	9½x15½	256	. . .	. . . .	. .	. . . .	. .	500 450	9 10	. . .	. . .	. .	. .	24	16	10	14
Shaft No. 11,	10x16	238	. . .	. . . .	. . .	950	8	250	9	. . .	. . .	. .	.	24	16	10	14
Shaft No. 7,	9½x16	311	. . .	. . . .	. . .	. . . .	. . .	350 196	8 6	. . .	. . .	. .	1	24	18	12	15
Slope No. 4,	10x12	77	7x10	175	8	520	7	640	6	7x6	92	. .	1	24	16	10	15
Shaft No. 4,	9½x16½	233	. . .	. . . .	. . .	. . . .	. . .	375	8	. . .	. . .	1	. .	23	17	11	15
§Breaker No. 2,	. . . . .	. . .	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	. . .	. . .	1	. .	. . . .	. . . .	. . .	. . . .
Tunnel No. 1,	. . . . .	. . . .	7x10	675	17	. . . .	. . .	342 230	10 14	. . .	. . .	. .	1	24	16	12	15
Slope No. 6,	9½x14	98	. . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	. . .	. . .	. .	. .	20	15	10	14
Shaft No. 1,	10x20	430	. . .	. . . .	. .	. . . .	. . .	. . . .	. . .	. . .	. . .	. .	. .	25	15	10	15

*Abandoned July 1, 1882. † Taking coal out without any reference to system; only working a few men; mine nearly worked out.
‡ New shaft; no coal shipped in 1882. ‖ Commenced working December, 1882. §Prepares coal from mines having no breaker.

TABLE No. 7—*Continued.*

PENNSYLVANIA COAL COMPANY—Continued.

NAME OF COLLIERIES.	Dimensions of shaft.	Depth of shaft in feet.	Dimensions of slope in feet.	Length of slope in feet.	Angle of slope in deg.	Length of planes outside in feet.	Angle of plane outside in feet.	Length of plane inside in feet.	Angle of plane inside in degrees.	Dimension of tunnels in feet.	Length of tunnels to coal in feet.	Number of breakers.	Number of screens and chutes.	What is the average width of chambers?	What is the average width of pillras?	What is the width of headings in feet?	What is the width of air-ways in feet?
Shaft No. 8,	9½x14½	206	. .	. . . .	. . .	. . . .	. . .	550	6	. .	. . .	1	. .	25	15	10	15
								450	9								
Shaft No. 10, 7-foot vein,	. . . .	. . .	. . .	. . . .	. . .	. . . .	. . .	150	11	. . .	. . .	. .	. .	. . . .	. . . .	. . . .	. . . .
								315	9								
Shaft No. 10, 14-foot vein,	12x27⅔	159	. . .	. . . .	. . .	441	12	300	10	. . .	. . .	1	. .	24	17	10	15
								400	9								
Shaft No. 10, Marcy vein,	12x31½	255	. . .	. . . .	. . .	. . . .	. . .	487	10	. . .	. . .	. .	. .	24	16	11	15
								330	9½								
Shaft No. 9,	10x19	140	. . .	. . . .	. . .	. . . .	. . .	150	11	. . .	. . .	. .	. .	24	15	10	15
								375	6								
Barnum Shaft No. 1, 7-foot vein,	12x47	127	. . .	. . . .	. . .	. . . .	. .	. . . .	. .	. . .	. . .	. .	. .	26	14	10	15
Barnum Shaft No. 1, 14-foot vein,	12x47	173	. . .	. . . .	. . .	. . . .	. . .	. . . .	. .	. . .	. . .	1	. .	24	16	10	15
Barnum Shaft No. 2, 7-foot vein,	10x21	154	. . .	. . . .	. . .	. . . .	. . .	175	10	. . .	. . .	. .	. .	26	14	10	15
Barnum Shaft No. 2, 14-foot vein,	10x21	202	. .	. . . .	. . .	. . . .	. . .	. . .	. .	. . .	. . .	. .	. .	24	16	10	15
Shaft No. 12,	10x18½	136	. . .	. . . .	. . .	238	16	220	10	. . .	. . .	. .	. .	30	15	12	15
								300	10								
Shaft No. 13,	12x31½	140	. . .	. . . .	. . .	. . . .	. . .	. . .	. .	. . .	. . .	. .	1	28	16	12	15
Law Shaft,	12x24½	207	. . .	. . . .	. . .	300	15	322	10	. . .	. . .	1	. .	28	16	12	15
Stark Shaft,	12x17	113	. .	. . . .	. . .	. . . .	. . .	. . . .	. .	. . .	. . .	1	. .	25	16	12	16
*Carbon Hill Shaft,	. . . .	. . .	. . .	. . . .	. . .	. . . .	. . .	. . . .	. .	. . .	. . .	. .	. .	. . . .	. . . .	. . . .	. . . .
†New Shaft, Lackawanna,	. . . .	. . .	. . .	. . . .	. . .	. . . .	. . .	. . . .	. .	. . .	. . .	. .	. .	. . . .	. . . .	. . . .	. . . .
Shaft No. 2, top vein, Dunmore,	12x16	53	5x12	1,900	3½	. . . .	. . .	. . . .	. .	. . .	. . .	. .	1	28	17	12	15
Shaft No. 2, middle vein, Dunmore,	12x16	87	. .	1,900	3½	. . . .	. . .	. . .	. .	. . .	. . .	. .	. .	30	15	12	15
Shaft No. 2, bottom vein, Dunmore,	12x16	136½	. . .	. . . .	. . .	. . . .	. . .	. . . .	. .	. . .	. . .	. .	. .	30	15	12	15
Shaft No. 3, top vein, Dunmore,	12x18	60	5x12	1,000	3½	375	12	. . . .	. .	. . .	. . .	. .	. .	30	15	12	15
Shaft No. 3, middle,	12x18	102	. . .	. . . .	. . .	. . .	. . .	. . . .	. .	. . .	. . .	. .	. .	30	15	12	15
Shaft No. 3, bottom,	12x18	167	. . .	. . . .	. . .	. . . .	. . .	. . . .	. .	. . .	. . .	1	. .	30	15	12	15
Shaft No. 4, top,	12x17	59	. . .	. . . .	. . .	. . . .	. . .	. . . .	. .	. . .	. . .	. .	. .	30	15	12	15
Shaft No. 4, bottom,	12x17	100	. . .	. . . .	. . .	. . . .	. . .	762	3½	. . .	. . .	. .	. .	30	15	12	15
	20	4,722	5	5,660	. . .	2,824	6	9,014	26	1	92	10	7	. . . .	. . . .	. . . .	. . . .

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Pyne Shaft,	10x34	319	7x14	772	18	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	18	12	15
Taylor Shaft,	12x16	180	. .	. . .	. . .	. . .	. . .	. . .	. . .	7½x7	50	1	. .	30	18	12	18
	10x20	180	. . .	. . .	. .	. . .	. . .	. . .	. . .	. . .							
Archbald Shaft,	10x27	354	7x12	563	17	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	18	12	15
Sloan Shaft,	10x35	393	7x14	800	22	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	16	12	15
Continental Shaft,	10x21	391	. . .	. . .		200	10	. . .	. . .	. . .	. . .	1	. .	27	21	12	15
	13 ft. clr	373	. . .	398	7			. . .	. . .								
Hampton Shaft,	9x17	156	7x14	810	6½	. . .	. . .	. . .	. . .	7x14	256	1	. .	30	15	12	15
	6x10	103				. . .	. . .	. . .	. . .								
Dodge Shaft,	10x21	297	. .	. . .	. . .	260	22	. . .	. . .	. . .	. . .	1	.	30	15 to 18	12	15
	13 ft. clr	254	. . .	. . .	. . .			. . .	. . .								
Scranton Coal Company Slope,	12x12	60	8x12	1,171	4—11	338	12	. . .	. . .	. . .	. . .	1	. .	30	18	12	16
Bellevue Shaft,	9x18	220	7x12	265	5½	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	15	12	15
			7x11	762	5	. . .	. . .	. . .	. . .								
Bellevue Slope,	9x10	221	7x12	662	10	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	18	12	16
			7x12	581	7	. . .	. . .	. . .	. . .								
Central Shaft,	10x34	320	7x12	900	2	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	18	12	15
	10x21	400				. . .	. . .	. . .	. . .								
Hyde Park Shaft,	10x18	265	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	15	12	15
	12x12	233	. . .	. . .	. . .	. . .	. . .	. . .	. . .								
Oxford Shaft,	10x23	238	‡	. . .	. . .	. . .	. . .	. . .	. . .	. . .	.	1	. .	. . .	. . .	. . .	. . .
	10x24	354	. .	. . .	. . .	. . .	. . .	. . .	. . .								
Diamond Shaft No. 2,	10x14	223	15x6	148	. . .	204	25	. . .	. . .	. . .	. .	. .	. .	27	21	12	15
Diamond Shaft No. 2,	10x17	385	7x11	292	. . .						. . .	1	. .	27	18	12	15
	10x14	170			. . .												
Diamond No. 2 Slope,	12x12	185	7x21	375	20	. . .	. . .	. . .	. . .	. . .	. .	. .	. .	30	15	12	15
Diamond Tripp Slope,	. . . .	. . .	6x12	324	9¼	. . .	. . .	. . .	. . .	. . .	. .	1	. .	30	12	12	15
Brisbin Shaft,	10x37	378	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	18	12	15
Cayuga Shaft,	10x32	368	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	30	18	12	15
Jermyn Shaft No. 2,	10x23	165	. . .	482	3¾	. . .	. . .	. . .	. . .	. . .	. . .	1	. .	27	15	12	15
				528	4												
	27	7,185	17	9,833		1,002	4			2	306	17					

DELAWARE AND HUDSON CANAL COMPANY.

Von Storch Shaft,	10x30	547	7x15	1,000	9¼	280	14½	600	8½								
	. . . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	600	4¾	7x10	700	1	. .	30	18	10	14
	10x14	257	7x10	550	4¼	425	11⅛	400	4¾								
Leggett's Creek Shaft,	10x27	324	7x10	150	6½	700	11⅛	. . . .	. . .	7x13	200	1	. .	30	18	10	14
	10x11	320															
Marvine Shaft,	10x42	300	7x12	550	4¾	300	11½	600	6½	. . .	. . .	1	. .	30	18	10	14
Eddy Creek Shaft,	10x27	386	7x10	600	4	250	11½	700	5¾	. . .	. . .	1	§	. . . .	. . . .	. . . .	. . . .
Olyphant No. 2 Shaft,	10x30	408	. . .	. . . .	. .	250	9⅝	450	5¾	7x10	100	1	. .	30	18.21	10	14

* This shaft has been filled with water for some years; now being pumped out. † Sinking. ‡ Finished sinking to the Clark vein.
§ New breaker; expect to start it soon after the 1st of new year.

TABLE No. 7.—*Continued.*

DELAWARE AND HUDSON CANAL COMPANY.—Continued.

NAME OF COLLIERIES.	Dimensions of shaft.	Depth of shaft in feet.	Dimensions of slope in feet.	Length of slope in feet.	Angle of slope in deg.	Length of planes outside in feet.	Angle of plane outside in feet.	Length of plane inside in feet.	Angle of plane inside in degrees.	Dimension of tunnels in feet.	Length of tunnels to coal in feet.	Number of breakers.	Number of screens and chutes.	What is the average width of chambers?	What is the average width of pillars?	What is the width of headings in feet?	What is the width of air-ways in feet?
Grassy Island Shaft,	10x27 11x14 7x14	300 252 240	7x10	500	4¼	200	14½	300 550	14⅛ 4	. . . . . .	. . . . . .	. . 1	. . . .	30	18	10	14
White Oak Mines,	7x7 9x9	25 81	7x10	1,200	4	400 500	8½ 11½	450 500	7 1-6 7 1-6	7x10	150	1	. .	36	14	10	14
Jermyn No. 2 Slope,	. . . . .	. . . .	7x12	200	11½	200	11½	450 500 450	4½ 4 5⅔	. . .	. . .	1	. .	36	14	12	. . . .
Jermyn No. 1 Shaft,	9x23	90	7x12	1,300	4¾	200	9⅔	. . . .	. .	. . .	. . .	1	.	36	14	12	12
Powderly Slope,	8x10	80	7x10	700	7 1-6	500	9⅔	. . . .	. . .	6x9	200	. .	*	. . . .	. . . .	. . . .	. . . .
No. 3 Shaft, Carbondale,	10x12 10x27	20 90	. . . . . .	. . . .	. . . . . .	. . . .	. . . . . .	. . . .	. . . .	. . . .	. . . .	. . . .	1	30	18	8	14
No. 1 Shaft, Carbondale,	11x11 9x9	83 90	6x8	300	8¼	600	9⅔	300 400	8½ 4¾	7x11	300	. .	1	30 & 36	18 14	 10	 14
Coal Brook Mines,	10x18	40	. .	. . . .	. . .	200 200	14½ 9⅔	300 500	7 1-6 9⅔	7x10 7x9	250 300	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .
Coal Brook Mines,	. . . . .	. . . .	. . .	. . . .	. . .	. . . .	. . .	487 400	11½ 6½	. . . 7x9	. . . 800	. . 1	. . 1	 30	 15	 10	 14
Racket Brook Breaker,	. . . . .	. . . .	. . .	. . . .	. . .	200	14½	. . .	. . .	. . .	. . .	1	. .	. . . .	. . . .	. . . .	. . . .
	19	3,933	11	7,050		5,405	16	8,937	19	9	3,000	11	3				

* Pumping out water at present.

TABLE No. 7.—*Continued.*

MISCELLANEOUS COAL COMPANIES.

NAMES OF COLLIERIES.	Do you work airways along all gangways and headings?	Length of headings in feet.	Length of airways in feet.	Length of T iron track laid in mines.	Length of strap iron track laid in mines.	Length of T or S strap iron laid outside.	What is the nature of the roof?	What is the name of the seam of coal worked?	What is the average thickness of the seam worked?
Everhart Slope,	Yes,	1,150	1,090	2,840	630	2,550	Hard rock,	Bottom,	9 ft.
Eagle Shaft,	"	1,780	1,200	2,443	309	1,274	Rock and slate,	Ross,	9 ft.
Tompkins Shaft,	"	1,950	1,900	3,350	. . .	. . . .	Rock,	Clark,	4 ft.
						2,700T			
Fairmount Shaft,	"	5,000	3,800	7,000	. . . .	1,300S	Black rock, good,	Marcy,	6 ft.
Twin Shaft,	"	. . . .	. . .	2,500	5,000	. . . .	Good hard slate,	Marcy vein,	4½ ft.
Butler Shaft,	"	2,500	2,500	1,500	15,000	3,000T	S. S. rock,	Marcy vein,	5 5-6 ft.
Mosier Shaft,	"	1,600	1,600	3,500	2,500	. . .	S. S. rock,	Marcy vein,	8 ft.
Heidelburg Shaft,	"	1,200	1,000	1,080	. . .	7,920T	Good,	Marcy vein,	9 to 12 ft.
Phœnix Shaft,	"	1,150	1,150	2,300	2,200	3,000	Good,	Pittston check'd & 14-ft. vein,	8¼ ft.
Columbia Tunnel,	"	840	1,200	2,928	1,670	651	Rider and soapstone,	Pittston check'd & Marcy vein,	7½ ft.
		1,737	1,700						
Stetler Shaft,	"	2,400	7,000	9,400	. . . .	500	Slate,	Stark,	7 ft.
Hillside Shaft,	"	20,600	16,720	6,000	1,500	7,500	Slate,	B, or Stark,	6 ft.
Spring Brook Tunnel,	"	1,494	1,474	. . . .	. . . .	4,164	Slate,	B, or Stark,	7½ ft.
		22,400	16,700	9,150	5,100	12,095			6 ft.
Greenwood Tunnel,	"	30,750	31,550	10,560	1,500	. . . .	Rock,	Rock,	. . . .
Drift No. 8,	"	2,250	2,500	. . . .	. . . .	22,176T	Rock,	Rock,	. . . .
Drift No. 10,	"	2,250	2,400	. . . .	. . . .	. . . .	Rock,	Rock,	. . . .
Drift No. 11,	"	3,700	3,900	. . . .	. . . .	. . . .	Rock,	Rock,	. . . .
						5,280T			
Sibley Shaft,	"	5,200	5,200	6,336	3,600	1,400S	Rock,	Rock,	. . . .
National Shaft Slope,	"	4,600	4,600	3,000	200	1,300	Hard sandstone,	No. 5,	. . . .
Meadow Brook Shaft and Tunnel,	"	19,350	15,250	4,130	11,050	1,700	Hard sandstone,	No. 5,	. . . .
		21,100	21,100	4,000	600	5,700			
Bridge Slope,	"	2,200	2,200	4,000	1,000	2,000	Slate,	G and rock,	14 and 6 ft.
		2,900	2,900	6,000					
Mount Pleasant Slope,	"	. . .	. . .	7,600	3,400	9,750S	Slate,	Diamond,	7 ft.
Capouse Shaft,	"	21,400	21,400	26,200	. . . .	9,000	Rock,	Clark,	7 ft.
Pine Brook Shaft,	"	1,200	1,200	2,400	. . . .	3,500	Rock,	No. 4, 2d below Clark,	4½ ft.
Fair Lawn Slope,	"	5,200	4,900	6,800	. . . .	6,200	Good,	Clark vein,	7 ft.
Green Ridge Slope,	"	700	700	200	. . . .	. . . .	Slate,	14-ft. and Diamond vein,	8½ and 5 ft.
Lucus Shaft,	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	14-ft vein,	11 ft.

TABLE No. 7—*Continued.*

MISCELLANEOUS COAL COMPANIES.—Continued.

NAMES OF COLLIERIES.	Do you work airways along all gangways and headings?	Length of headings in feet.	Length of airways in feet.	Length of T iron track laid in mines.	Length of strap iron track laid in mines.	Length of T or S' = strap iron laid outside.	What is the nature of the roof?	What is the names of the seam of coal worked?	What is the average thickness of the seam worked?
Elk Hill Tunnel,	Yes.	900	900	2,000	500	18,000	Bony coal and rock,	No. 2 vein,	7 ft.
Pancoast Shaft and Slope,	"	2,260	2,940	6,000	1,125	10,570	Bony coal and rock,	Big, or G vein,	11 and 6 ft.
Throop Shaft,	"	500	500	850	. . . .	. . . .	Rock,	Don't know.	
Lackawanna Coal Company Shaft,	"	700	700	2,000	. . . .	. . . .	Slate,	G, or 14-ft. vein,	8½ ft.
Filer Shaft,	"	5,600	7,400	3,600	6,900	3,796	Rock,	Grassy Island vein,	10 ft.
Filer Slope,	"	6,950	6,950	3,850	4,700	3,500	Rock,	Archbald vein,	9 ft.
Peirce Coal Company Tunnel,	"	5,880	5,880	5,880	2,400	15,840	Bony coal and slate,	Archbald vein,	9 ft.
Eaton Slope and Tunnel,	"	25,635	11,610	10,000	10,000	15,600	Bony coal and slate,	Archbald vein,	9 ft.
Erie Shaft,	"	2,000	18,000	5,144	14,530	1,300	Hard blue sandstone,	Carbondale vein,	7½ ft.
Forest City Tunnel and Shaft,	"	6,000	3,500	4,500	900	850	Slate,	Forest City seam,	5 ft.
Belmont Tunnels,	"	4,700	4,800	9,500	. . . .	1,800	Slate,	No. 2 and 3 Carbondale,	6 and 5½ ft.
	. . . .	250,806	241,604	166,961	96,314	185,916	. . . . .	. . . . .	. . . . .

PENNSYLVANIA COAL COMPANY.

Slope No. 2,	Yes,	18,200	17,300	10,200	1,000	800	Rider and state,	Pittston 14-ft. vein,	10 ft.
Shaft No. 6,	"	12,850	10,050	12,000	4,000	1,228	Rider and slate,	Pittston 14-ft. vein,	11 ft.
Shaft No. 5,	"	11,386	10,160	9,876	1,510	3,000	Rider and slate,	Pittston 14-ft. vein,	10⅝ ft.
Shaft No. 11,	"	19,482	19,000	11,712	3,010	1,925	Slate and rock,	Pittston and Marcy vein,	11 and 3 ft.
Shaft No. 7,	"	17,150	14,950	9,650	4,375	961	Slate and rider,	Pittston 14-ft. vein,	11 ft.
Slope No. 4,	"	17,680	16,180	10,208	7,375	6,896	Slate,	Pittston 14-ft. vein,	10 ft.
Shaft No. 4,	"	8,750	8,200	13,373	21,430	1,780	Slate,	Pittston and Marcy vein,	13 and 5 ft.
Tunnel No. 1,	"	8,125	7,750	10,080	16,854	1,980	Rock,	Marcy vein,	5½ ft.
Slope No. 6,	"	3,400	3,400	2,200	2,800	1,000	Rider coal,	Pittston 7-ft. vein,	5½ ft.
Shaft No. 1,	"	4,500	4,500	4,700	1,100	2,200	Rock,	Marcy vein,	8 ft.
Shaft No. 8,	"	12,100	14,100	14,100	3,000	2,930	Rock,	Marcy vein,	8 ft.

Shaft No. 10, 7-foot vein,	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	Rider coal,	Pittston 7-ft. vein,	6 feet.
Shaft No. 10, 14-foot vein,	Yes.	12,875	11,400	5,874	7,197	3,882	Rider coal and slate,	Pittston 14-ft. vein,	8 feet.
Shaft No. 10, Marcy vein,	"	12,381	15,180	11,511	4,734	2,022	Hard rock,	Marcy vein,	8 feet.
Shaft No. 9,	"	7,100	7,700	7,580	3,198	2,000	Rider coal,	Pittston 14-ft. vein,	8 feet.
Barnum Shaft No. 1, 7-foot vein,	"	5,400	5,400	4,000	700	500	Rider coal,	Pittston 7-ft. vein,	6½ feet.
Barnum Shaft No. 1, 14-foot vein,	"	5,800	6,000	2,400	700	500	Black rock,	Pittston 14-ft. vein,	9 feet.
Barnum Shaft No. 2, 7-foot vein,	"	. . . .	. . . .	. .	. .	. . . .	Rider coal,	Pittston 7-ft. vein,	6⅝ feet.
Barnum Shaft No. 2, 14-foot vein,	"	8,600	8,600	6,200	. . .	1,500	Black rock,	Pittston 14-ft. vein,	9 feet.
Shaft No. 12,	Gen'lly	8.800	13,250	5,250	1,800	1,938	Soap stone roof,	Powder Mill vein,	10 feet.
Shaft No. 13,	"	15.450	12,100	7,250	15,150	5,200	Slate and rock,	Powder Mill vein,	10 feet.
Law Shaft,	"	16,050	12,800	9,350	4,700	5,100	Soap stone,	Powder Mill vein,	12 feet.
Stark Shaft,	Yes.	4,230	4,000	9,290	2,925	1,745	Sand stone,	Powder Mill vein,	12 feet.
Shaft No. 2, top vein, Dunmore,	"	3,600	3,600	4,000	3,700	1,690	Black slate,	Top vein,	5 feet.
Shaft No. 2, middle vein, Dunmore,	"	3,000	3,000	2,900	1,200	. . . .	Sand stone,	Middle vein,	4¾ feet.
Shaft No. 2, bottom vein, Dunmore,	"	1,500	1,000	200	2,000	. . . .	Bony coal and slate,	Bottom vein,	3 feet.
Shaft No. 3, top vein, Dunmore,	"	5,200	5,200	1,300	. . .	500	Sand stone,	Dunmore top vein,	4½ feet.
Shaft No. 3, middle,	"	4,950	4,950	1,500	600	. . . .	Slate,	Dunmore middle vein,	4½ feet.
Shaft No. 3, bottom,	"	4,700	4,700	2,500	1,300	. . . .	Slate,	Dunmore bottom vein,	4½ feet.
Shaft No. 4, top,	"	3,850	3,850	300	800	2,500	Slate,	Dunmore middle vein,	4½ feet.
Shaft No. 4, bottom,	"	6,600	6,000	3,000	2,000	. . . .	Slate,	Dunmore bottom vein,	4½ feet.
	. . . .	263,709	244,320	192,504	119,758	54,057			

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Pyne Shaft,	Yes.	Not given.	Not given.	41,808	. . . .	5,300	Bony coal,	Clark and New County vein,	13 and 7 ft.
Taylor Shaft,	"			38,296	6,225	11,810	Slate,	Clark and Rock vein,	9 and 7 ft.
Archbald Shaft,	"			16,158	1,200	3,320	Slate,	F vein and New County,	7 feet.
Sloan Shaft,	"			17,553	. . . .	3,000	Slate,	G or Big F or rock vein,	10 and 7 ft.
Continental Shaft,	"			20,529	3,090	3,810	Bony coal,	Clark vein, F vein,	9 and 7 ft.
Hampden Shaft,	"			56,450	3,500	5,450	Slate,	E vein, F, or Rock vein,	6 and 7 ft.
Dodge Shaft,	"			25,502	4,838	7,200	Slate,	G, or Big vein, F, or Rock vein,	12 and 7 ft.
Scranton Coal Company's Slope,	"			8,686	. . .	6,150	Rock,	Clark vein, and New County,	9 and 8 ft.
Bellevue Shaft,	"			19,149	1,050	. . . .	Slate,	Clark vein,	7 and 7 ft.
Bellevue Slope,	"			17,304	420	6,070	Slate,	F, or Rock vein,	7 feet.
Central Shaft,	"			35,346	3,528	4,449	Slate,	G, or Big vein, F, or Rock vein	12 feet.
Hyde Park Shaft,	. . . .			24,464	1,614	4,620	Slate,	G, or Big vein,	12 feet.
Oxford Shaft,	"			. . . .	. . . .	. . . .	. . . . .	Rock vein,	. . . . .
Diamond Shaft No. 2,	"			20,783	310	. . . .	Slate,	G, or Big vein,	12 feet.
Diamond Shaft No. 2,	"			. . . .	17,183	12,671T	Slate,	F and E vein,	7 and 6 ft.
Diamond No. 2 Slope,	"			26,364	1,200	4,572S	Slate,	G, or Big vein,	12 feet.
Diamond Tripp Slope,	"			15,869	. . . .	. . . .	Slate and fire-clay,	E vein,	6 feet.
Brisbin Shaft,	"			22,783	1,656	4,685	Slate,	G, or Big vein,	12 feet.
Cayuga Shaft,	"			22,875	. . .	4,124	Slate,	G, or Big vein,	10 feet.
Jermyn Shaft, No. 2,	"			17,208	450	2,450	Slate,	Clark vein,	8 feet.
	. . . .	. . . .	. . . .	445,126	46,264	89,621			

TABLE No. 7.—*Continued.*

DELAWARE AND HUDSON CANAL COMPANY.

NAME OF COLLIERIES.	Do you work airways along all gangways and headings?	Length of headings in feet.	Length of airways in feet.	Length of T iron track laid in mines.	Length of strap iron laid in mines.	Length of T or S strap iron laid outside.	What is the nature of the roof?	What is the nature of the seam of coal worked?	What is the average thickness of the seams worked?
Von Storch Shaft,	Yes,	60,200	60,393	67,129	6,450	3,798	Slate and rock,	Diamond, 14-ft. and Clark veins,	7 and 11 ft.
Von Storch Shaft,	....	....	....	....	....	....	Slate and rock,	Diamond, 14-ft. and Clark veins,	8 feet.
Leggett's Creek Shaft,	Yes.	26,460	29,720	51,300	5,598	1,500	Slate and rock,	Diamond and 14-ft. veins,	7 and 11 ft.
Marvine Shaft,	"	19,825	20,875	25,400	....	1,500	Slate and rock,	Diamond and 14-ft. veins,	7 and 11 ft.
Olyphant No. 3 Shaft,	"	16,000	17,380	29,280	9,420	2,550	Slate and rock,	Grassy Island vein,	6 and 9 ft.
Grassy Island Shaft,	"	26,890	19,810	23,463	20,316	7,200	Rock roof,	Grassy Island vein,	6 and 11 ft.
White Oak Mines,	"	12,875	10,780	4,791	17,523	1,500	Rock roof,	Archbald vein,	10 feet.
Jermyn No. 2 Slope,	No.	8,780	....	11,880	5,412	300	Rock roof,	Archbald vein,	10 feet.
Jermyn No. 1 Shaft,	Yes.	24,496	21,800	21,552	6,540	750	Rock roof,	Archbald vein,	10 feet.
No. 3 Shaft, Carbondale,	No.	20,800	....	....	26,001	300	Slate roof,	Bottom seam,	6 feet.
No. 1 Shaft, Carbondale,	"	21,800	15,896	3,180	22,254	2,700	Slate rock,	Top and Bottom seams,	7 and 6 ft.
Coal Brook Mines,	Yes.	....	....	....	....	....	....	....	....
Coal Brook Mines,	"	48,790	49,400	10,800	36,785	18,120	Rock,	Top and Bottom seams,	5 and 7 ft.
Racket Brook Breaker,	....	....	....	....	....	4,500	....	....	....
	....	285,916	245,954	248,755	156,299	44,628			

TABLE NO. 7.—*Continued.*

RECAPITULATION.

Name of Companies.	Number of shafts.	Depth of shaft in feet.	Number of slopes.	Length of slope in feet.	Length of planes outside in feet.	Number of planes outside.	Length of plane inside in feet.	Number of planes inside.	Number of tunnels.	Length of tunnels to coal in feet.	Number of breakers.	Number of screens and chutes.	Length of headings in ft.	Length of airways in ft.	Length of T iron track laid in mines.	Length of strap iron track laid in mines.	Length of T or S. strap iron laid outside.
Miscellaneous Coal Companies,	29	5,566	18	9,010	5,409	16	9,475	19	15	2,700	33	2	250,806	241,604	166,961	96,314	185,916
Pennsylvania Coal Company, .	20	4,722	5	5,660	2,824	6	9,014	26	1	92	10	7	263,709	244,320	192,504	119,758	54,057
Delaware, Lackawanna and Western Railroad Company, .	27	7,185	17	9,833	1,002	4	. . . .	. .	2	306	17	. . .	Not	given.	445,126	46,264	89,621
Delaware and Hudson Canal Company, ...	19	3,933	11	7,050	5,405	16	8,937	19	9	3,000	11	3	285,916	245,954	248,755	156,299	44,628
Totals, ...	95	21,406	51	31,553	14,640	42	27,426	64	27	6,098	71	12	800,431	731,878	1,053,346	418,635	373,162

There are 95 shafts, with a total depth of 21,406 feet.
There are 51 slopes, with a total length of 31,553 feet.
There are 42 outside planes, with a total length of 14,640 feet,
There are 64 inside planes, with a total length of 27,426 feet,
} These require about 20 miles of wire rope.

There are 27 tunnels, with a total distance of 6,098 feet to the coal.

There are 71 breakers.

There are 12 buildings with chute, for the purpose of loading coal.

There are 1,053,346 feet of T iron railroad track laid in the mines, ... 199.5 miles,
There are 418,635 feet of strap iron railroad track laid in the mines, ... 79.29 miles,
} making 278.79 miles inside,

There are 373,162 feet of T and strap iron railroad track laid on the surface, in connection with the mines, . 70.67 miles, making 70.67 miles outside.

TABLE No. 7.—*Continued.*

MISCELLANEOUS COAL COMPANIES.

NAME OF COLLIERIES.	Have you got an ambulance and stretchers at your mines?	Is the breaker machinery fenced and boxed off?	Are the shaft landings protected by safety gates?	Is there a metal speaking tube in the shaft or slope?	Is there a safety carriage or cage with all modern improvements?	Is there a safety carriage or cage furnished whenever ten men are waiting to come out of mines?	Are persons allowed to ride on loaded cars in shafts or on slopes and planes?	Are there more than ten persons allowed to ride on safety carriage or cage at one time?	Are the engineers experienced, competent, and sober men?	Have they reported the condition of boilers according to law? Are they in a safe condition?	Have they furnished a map or plan of mine workings?
Everhart Slope,	Yes,	Yes,		No,			No,	No,	Yes,	Yes,	Yes.
Eagle Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Tompkins' Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Fairmount Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Seneca Slope,	Abandoned	July 1,	1882.								
Twin Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Butler Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Mosier Shaft,	Yes,	Yes.	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Heidelberg Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes.	Yes.
Phœnix Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Columbia Tunnel,	Yes,	Yes,					No,		Yes,	Yes,	Yes.
Stetler Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Hillside Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes.	
Spring Brook Tunnels,	Yes,	Yes,	Yes,				No,	No,	Yes,	Yes.	
Greenwood Tunnels,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Sibley Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
National Shaft and Slope,	2 stretchers, ambulance ordered,	Yes,	Yes,	Yes,	Yes,	Slope manway,	No,	No,	Yes,	Yes,	Yes.
Meadow Brook Shaft and Tunnel,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Bridge Slope,	Yes,	Yes,		Yes,			No,		Yes,	Yes,	Yes.
Mt. Pleasant Slope,	Yes,	Yes,		No,			No,	No,		Yes,	Yes.
Capouse Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Pine Brook Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Fair Lawn Slope,	Stretchers,	Yes,	Yes,	Use bell,			No,	No,	Yes,	Yes,	Yes.
Green Ridge Slope,	Stretchers,	Yes,	Yes,	Yes,	Yes,		No,	No,	Yes,	Yes,	Yes.
Lucas Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Elk Hill Tunnel,	Yes,	Yes,					No,		Yes,	Yes,	Yes.
Pancoast Shaft and Slope,	Yes,	Yes,	Yes,	Telephone,	Yes,		No,	No,	Yes,	Yes,	Yes.
Throop Shaft,	Yes,	Yes,	Yes,	S. tube,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.

Lackawanna Coal Company's Shaft,	Stretchers,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Filer's Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,		No,	No,	Yes,	Yes,	Yes.
Filer's Slope,	Yes,	Yes,		Yes,			No,	No,	Yes,	Yes,	Yes.
Pierce Coal Company's Tunnel,	Ambulance,	Yes,					No,	No,	Yes,	Yes,	Yes.
Eaton Slope and Tunnel,	Yes,	Yes,					No,		Yes,	Yes,	Yes.
Erie Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	Yes.
Keystone Tunnel,	Yes,	Comm	enced	working in	Decem	ber, 1882.					
Forest City Tunnel and Shaft,	Stretchers,						No,	No.			
Belmont Tunnels,	Yes,	Yes,					No,	No,	Yes,	Yes.	

PENNSYLVANIA COAL COMPANY.

Slope No. 2,	Yes,			No,		Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 6,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 5,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 11,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 7,	Yes,		Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Slope No. 4,	Yes,			Yes,				No,	Yes,	Yes,	Yes.
Shaft No. 4,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Breaker No. 2,		Yes,	Yes.								
Tunnel No. 1,	Yes,			Yes,			No,		Yes,	Yes,	Yes.
Slope No. 6,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 1,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 8,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 10—Seven-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 10—Fourteen-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft 10—Marcy Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 9,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Barnum Shaft, No. 1—Seven-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Barnum Shaft, No. 1—Fourteen-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Barnum Shaft, No. 2—Seven-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Barnum Shaft, No. 2—Fourteen-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 12,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 13,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Law Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Stark Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Carbon Hill Shaft,	Yes,		Yes,	Yes.							
New Shaft, Lackawanna,	Yes.										
Shaft No. 2, Dunmore,	Yes,		Yes,	In shaft,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 3, "	Yes,		Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Shaft No. 4, "	Yes,		Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Pyne Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Taylor Shaft,	Stretcher,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Archbald Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.

TABLE No. 7—*Continued.*

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY—*Continued.*

NAMES OF COLLIERIES.	Have you got an ambulance and stretchers at your mines?	Is the breaker machinery fenced and boxed off?	Are the shaft landings protected by safety gates?	Is there a metal speaking tube in the shaft or slope?	Is there a safety carriage or cage, with all modern improvements?	Is there a safety carriage or cage furnished whenever ten men are waiting to come out of mines?	Are persons allowed to ride on loaded cars in shafts or on slopes and planes?	Are more than ten persons allowed to ride on safety carriage or cage at one time?	Are the engineers experienced, competent, and sober men?	Have they reported the condition of boilers according to law? Are they in a safe condition?	Have they furnished a map or plan of mine workings?
Sloan Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Continental Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Hampton Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Dodge Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Scranton Coal Company Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Bellevue Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Bellevue Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Central Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Hyde Park Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Oxford Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Diamond Shaft, No. 2,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Diamond Shaft, No. 2,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Diamond Shaft, No. 2 Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Diamond Tripp Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Brisbin Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Cayuga Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Jermyn Shaft, No. 3,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.

DELAWARE AND HUDSON CANAL COMPANY.

Von Storch Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Von Storch Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Leggit's Creek Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Marvine Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Eddy Creek Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Olyphant, No. 2, Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Grassy Island Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.

White Oak Mines,	Yes,	Yes,	Yes,	. . .	. . .	. . .	. . .	No,	Yes,	Yes,	Yes.
Jermyn, No. 2, Slope,	Yes,	Yes,	Yes,	. . .	. . .	Yes,	. . .	No,	Yes,	Yes,	Yes.
Jermyn, No. 1, Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Powderly Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
No. 3 Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
No. 1 Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Coal Brook Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Coal Brook Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Racket Brook Breaker,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes.				

TABLE No. 7.—*Continued.*

MISCELLANEOUS COAL COMPANIES—*Continued.*

NAME OF COLLIERIES.	Do the parties having charge know their duties in case of death or serious accidents?	Is the mining boss a competent and practical man?	Has the mining boss an assistant or fire boss?	Is the mine examined every morning before persons are allowed to enter it to work?	Is the mine examined every morning to see that the main doors are all closed?	Are there attendants at all main doors?	Are the doors hung on main roads so as to close of their own accord?	Are there double doors on main travelled roads?	Is there an extra door in case of an accident to any of the other doors?	Is there any noxious or inflammable gas evolved in the mines?	Are you working towards where there is any standing water or gas?	Are you familiar with the mine laws of 1870 and its supplements?	Have you established a code of mine rules for the better protection of life and property?	Have you got a second opening yet?
Everhart Slope,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	Yes,	No,	No,	No,	No,	Yes,	Yes,	Yes.
Eagle Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes.
Tompkins' Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	Yes.
Fairmount Shaft,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	Yes,	No.	No,	No,	No,	Yes,	No,	Yes.
Twin Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes.	Yes,	Yes.	No,	Yes,	Yes,	Yes.
Butler Shaft,	Yes,	Yes,	. . . .	. . . .	Yes,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	Yes,	Yes.
Mosier Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	Yes,	Yes.
Heidelberg Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Somewhat,	Yes,	Yes.
Phœnix Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Columbia Tunnel,	Yes,	Yes,	No,	. . . .	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Stetler Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes.
Hillside Shaft,	Yes,	Yes,	No,	Yes,	No.	Yes,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	Yes.
Spring Brook Tunnels,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	Yes.
Greenwood Tunnels,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	No,	Yes,	No,	No,	Yes,	Yes,	Yes.
Sibley Shaft,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	No,	Yes,	No,	No,	Yes,	Yes,	Yes.
National Shaft and Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	Yes,	No.
Meadow Brook Shaft and Tunnel,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Bridge Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	No,	Yes,	No,	Yes.
Mt. Pleasant Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	No,	Yes,	Yes,	Yes.
Capouse Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Pine Brook Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Fair Lawn Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Green Ridge Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Lucas Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Elk Hill Tunnel,	Yes,	Yes,	No,	. . . .	. . . .	Yes,	Yes,	No,	No,	No,	No,	Yes,	Yes,	No.
Pancoast Shaft and Slope,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	Yes.
Throop Shaft,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes.
Lackawanna Coal Company's Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	No,	Yes,	Yes,	No.

Filer's Shaft,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Filer's Slope,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	Yes.	Yes,	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Pierce Coal Company's Tunnel,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	No,	Yes,	. . .	No,	Yes.
Eaton Slope and Tunnel,	Yes,	Yes,	No,	. .	. . .	Yes,	Yes,	Yes,	. .	No,	No,	Yes,	. . .	Yes,	Yes.
Erie Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes.	No,	No,	No,	Yes,	. .	Yes,	Yes.
Forest City Tunnel and Shaft,	. . . .	. .	No,	. . .	. . . .	Yes,	. . . .	. . .	. .	No,	No,	Yes,	. . .	Yes,	Yes.
Belmont Tunnels,	No,	No,	No,	. . .	. . . .	Yes,	No,	No.	No,	No,	No,	No,	. . .	. . . .	Yes.

PENNSYLVANIA COAL COMPANY—*Continued.*

Slope No. 2,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 2,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 5,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 11,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 7,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Slope No. 4,	Yes,	Yes,	No,	Yes,	No,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 4,	Yes,	Yes,	Yes,	Yes,	Yes,	. . .	. . .	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Tunnel No. 1,	Yes,	Yes,	No,	No,	. . .	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Slope No. 6,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. .	Yes,	Yes.
Shaft No. 1,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 8,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 10—Seven-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yss,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. .	Yes,	Yes.
Shaft No. 10—Fourteen-foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 10—Marcy Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 9,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yas.
Barnum Shaft No. 1—Seven-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. .	Yes,	Yes.
Barnum Shaft, No. 1—Fourteen-foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Barnum Shaft No. 2—Seven-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Barnum Shaft No. 2—Fourteen-Foot Vein,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 12,	Yes,	Yes,	No,	No,	Yes,	Yes,	Yes,	. . . .	. . . .	No,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 13,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes,
Law Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes.	. . . .	. . . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Stark Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . .	. . .	Yes,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 2,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	No,	Yes,	No,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 3,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	No,	Yes,	No,	No,	Yes,	. . .	Yes,	Yes.
Shaft No. 4,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	No,	Yes,	No,	No,	Yes,	. . .	Yes,	Yes.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY—*Continued.*

Pyne Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	. . .	Yes,	Yes.
Taylor Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	. . .	Yes,	Yes.
Archbald Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	. . .	Yes,	Yes.

TABLE No. 7—*Continued.*

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY—*Continued.*

NAMES OF COLLIERIES.	Do the parties having charge know their duties in case of death or serious accidents?	Is the mining boss a competent and practical man?	Has the mining boss an assistant or fire boss?	Is the mine examined every morning before persons are allowed to enter it to work?	Is the mine examined every morning to see that the main doors are all closed?	Are there attendants at all main doors?	Are the doors hung on main roads so as to close of their own accord?	Are there double doors on main traveled roads?	Is there an extra door in case of an accident to any of the other doors?	Is there any noxious or inflammable gas evolved in the mines?	Are you working towards where there is any standing water or gas?	Are you familiar with the mine laws of 1870 and its supplements?	Have you established a code of mine rules for the better protection of life and property?	Have you got a second opening yet?
Sloan Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Continental Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Hampton Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Dodge Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Scranton Coal Company Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Bellevue Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Bellevue Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Central Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Hyde Park Shaft,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	Yes,
Oxford Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Diamond Shaft, No. 2,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Diamond Shaft, No. 2,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	No,	No,	No,	No,	Yes,	Yes,	Yes,
Diamond Shaft, No. 2 Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Diamond Tripp Slope,	Yes,	Yes,	No,	No,	No,	Yes,	Yes,	No,	No,	No,	No,	Yes,	Yes,	Yes,
Brisbin Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Cayuga Slope,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,
Jermyn Slope, No. 3,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	No,	Yes,	Yes,	Yes,

DELAWARE AND HUDSON CANAL COMPANY.

Von Storch Shaft,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	Yes,	. . .	Yes,	No,		Yes,	Yes,
Von Storch Shaft,	"	"	"	"	"	"	"	"	. . .	"	"		"	"
Leggitt's Creek Shaft,	"	"	"	"	"	"	"	"	. . .	"	"		"	"
Marvine Shaft,	"	"	"	"	"	"	"	"	. . .	"	"		"	"
Eddy Creek Shaft,	"	"	"	"	"	"	"	"	. . .	"	"	charge was of law, with	"	"
Oliphant, No. 2 Shaft,	"	"	"	"	"	"	"	"	. . .	"	"		"	"

| | | |

TABLE No. 8.—*Machinery and steam-power used at each colliery in the Eastern District of Luzerne and Carbon counties, now including all of Lackawanna and a portion of Wayne and Susquehanna counties, Pennsylvania, for year ending 31st day of December, A. D. 1882.*

NAME OF COLLIERIES.	Number of boilers.	DIMENSIONS. Length in feet.	DIMENSIONS. Diameter in inches.	Pressure per square inch.	Steam-gauge or safety valve.	Date of last examination.	Condition when last examined.	Number of main rolls.	Number of pony rolls.	Number of main screens.	Number of pony screens.
Everhart,	5	30	34	60	Both,	October 8, 1882,	Good,	2	2	1	1
Eagle Shaft,	3 2	36 16	30 48	45 75	Both, Both,	January 12, 1883, January 12, 1883,	Good,	2	2	1	2
Tompkins Shaft,	6	30	30	60	Both,	December 18, 1882,	Safe,	1	1	1	2
Fairmount Shaft,	4	22	34	70	Both,	November 5 and 12, 1882,	Good and safe,	1	1	1	2
Seneca Slope,	12	30	30	70	Both,	July 1, 1882,	Good and safe,	2	2	1	1
Ravine Shaft,	2	30	30	. . . .	Idle.						
Twin Shaft,	7 2	30 30	30 24	55 55	Both, Both,	September 24, 1882, August 8, 1882,	Good,	1	2	1	2
Beaver Slope,	2	31	30	40	Both,	December 25, 1882,	Good,	. . .	. . .	1	. . .
Butler Shaft,	4 3 2	29 39 25	30 30 30	65	Both,	July 26, 1882,	Good,	1	1	2	3
Mosier Shaft,	6	35	30	70	Both,	July 26, 1882,	Good,	1	1	1	4
Heidelberg Shaft,	9	30	36	60	Both,	Six in December, 1882, Three in January, 1883,	Good,	. . .	. .	. . .	. . .
Ontario Breaker,	8	30	30	60	Both,	Four December, 1882, Four January, 1883,	Good,	4	2	. . .	. . .
Phœnix Shaft,	6 1	36 20	34 48	65	Both,	January 1, 1883,	Good,	2	2	1	1
Columbia Tunnel,	2	31	30	40	Both,	October 16, 1882,	Good,	.	. .	1	. . .
Stetler Shaft,	12	40	34	75	Both,	January 1, 1883,	Good,	2	2	2	5
Hillside Shaft,	10	30	30	75	Both,	January 12, 1883,	Fair,	1	1	1	1
Spring Brook,	3 6	36 30	34 30	75	Both,	December 2, 1882,	Good,	1	1	3	1
Greenwood Slope,	6	30	30	80	Both,	December 24, 1882,	Good.				
Greenwood Shaft,	6	36	34	70	Both,	December 24, 1882,	Good.				
Phinney Breaker,	4	30	30	70	Both,	December 31, 1882,	Good,	1	1	4	1
Sibley Shaft,	8	30	30	60	Both,	July 11, 1882,	Good,	2	2	6	3
National Slope,	4	32	32	65	Both,	August 23, 1882,	Good,	2	2	4	2
National Shaft,	4	32	32	70	Both,	August 16 and 23, 1882,	Good.				

Meadow Brook Shaft,	6	32	32	65	Both,	August 2 and 9, 1882,	Good.				
Meadow Brook, inside,	2	36	30	65	Both,	August 16, 1882,	Good,	2	2	4	2
Meadow Brook Breaker,	3	32	32	60	Both,	August 9, 1882,	Good.				
Meadow Brook Tunnel, inside,	1	32	32	60	Both,	November 5, 1882,	Good.				
Bridge Slope,	5	30	30	75	Both,	September 29 and 30, 1882,	Good,	2	2	2	2
	3	30	34	75							
	2	32	34	75							
	1	20	49	75							
Mount Pleasant Slope,	8	36	30	80	Both,	November 12, 1882,	Good,	2	2	6	2
Mount Pleasant Air-shaft,	2	36	30		Both,	November 12, 1882,	Good.				
	2	20	Tubular,		Both,	November 12, 1882,					
Capouse Shaft,	15	30	36	74	Both,	October 1, 1882,	Good,	2	2	4	2
Pine Brook Shaft,	3	24	36	70	Both,	October 1, 1882,	Good,			1	1
	6	30	36	70	Both,	October 1, 1882,	Good.				
Fair Lawn Slope,	4	30	30	70	Both,	September 7, 1882,	Good,	2	2	1	2
Green Ridge Slope,	9	40	34	75	Both,	January, 1883,	Good,	2	2	3	2
Roaring Brook Shaft,	7	36	34	65	Both,	January, 1883,	Good,	2		2	
Lucas Shaft,	6	40	34	80	Both,	December 29, 1882,	Good,	2	2	2	4
Elk Hill mines,	2	50	30	50	Both,	July 6, 1882,	Good,	2	2	2	2
Pancoast Breaker,	3	32	30	60	Both,	August 24, 1882,	Good,	2	2	2	1
Pancoast Slope,	3	22	30	80	Both,	September 9, 1882,	Good.				
Pancoast Slope,	5	30	30	80	Both,	September 9, 1882,	Good.				
Throop Shaft,	12	36	34	75	Both,	December 4, 1882,	Good,	2	2	2	2
Throop Air-shaft,	6	36	34	75	Both,	December 4, 1882,	Good.				
Lackawanna Coal Company's colliery,	9	36	34	75	Both,	January, 1883,	Good,	2	2	2	2
Filer's Shaft,	6	30	30	70	Both,	December 17 and 18, 1882,	Good,	2	2	2	1
Filer's Slope,	6	30	30	75	Both,	December 26, 1882,	Good,	2	2	4	3
Filer's Fan Shaft,	3	30	30	75	Both,	December 26, 1882,	Good.				
Pierce Coal Company's mine,	3	30	30	75	Both,	December 26, 1882,	Good.				
Pierce Coal Company's Breaker,	3	30	30	75	Both,	December 26, 1882,	Good,	2	2	2	
Eaton Colliery Breaker,	3	40	34	60	Both,	January 7, 1883,	Good,	2		2	2
Eaton Colliery Slope,	3	36	34	60	Both,	December 31, 1882,	Good.				
Eaton New Shaft,	1	13	34	60	Both,	December 25, 1882,	Good.				
Erie Shaft,	15	30	34	80	Both,	October 20 and 27, 1882, November 29, 1882,	Good,	1	1	4	2
Keystone Tunnel,	2	30	34	50	Both,	New,	Good,		1	1	
Belmont Tunnel,	3	30	30	60	Both,	Cleaned, but not reported since April 30, 1882,		1	1	1	2
	322	10,150						60	56	81	65

PENNSYLVANIA COAL COMPANY.

Slope No. 2,	6	46	30	75	Both,	August 18 and 19, 1882,	Good.				
Shaft No. 6,	9	36	30	70	Both,	August 20, 1882,	Good,	1		4	1
Shaft No. 5,	3	36	30	75	Both,	August 20, 1882,	Good.				
Shaft No. 11,	3	36	30	75	Both,	August 13, 1882,	Good.				
Shaft No. 7,	7	36	30	85	Both,	August 13, 1882,	Good.				
Slope No. 4,	2	20	30	70	Both,	August 13 and 26, 1882,	Good.				
	6	36	30								
Shaft No. 4,	7	36	30	80	Both,	August 13 and 26, 1882,	Good.				

TABLE No. 8.—*Continued.*

PENNSYLVANIA COAL COMPANY.—Continued.

NAME OF COLLIERIES.	Number of boilers.	DIMENSIONS. Length in feet.	DIMENSIONS. Diameter in inches.	Pressure per square inch.	Steam-gauge or safety valve.	Date of last examination.	Condition when last examined.	Number of main rolls.	Number of pony rolls.	Number of main screens.	Number of pony screens.
No. 2 Breaker,	5	36	30	80	Both,	October 29, 1882,	Good,	1	0	2	4
Tunnel No. 1,	3	36	30	75	Both,	August 19, 1882,	Good.				
Slope No. 6,	Takes steam from No. 8 Shaft.						Good.				
Shaft No. 1,	5	36	30	75	Both,	August 27, 1882,	Good.				
Shaft No. 8,	5	36	30	60	Both,	August 20, 1882,	Good,	1	0	2	2
Shaft No. 10,	12	36	30	75	Both,	August 20 and 27, 1882,	Good,	1	0	8	4
Shaft No. 9,	3	36	30	75	Both,	August 20, 1882,	Good,				
Barnum Shaft, No. 1,	10	36	30	85	Both,	August 20 and 27, 1882,	Good,	1	2	4	18
Barnum Shaft, No. 2,	6	36	30	75	Both,	August 20, 1882,	Good.				
Shaft No. 12,	6	36	30	70	Both,	August 31, 1882,	Good.				
Shaft No. 13,	5	36	30	95	Both,	August 26, 1882,	Good.				
Law Shaft,	11	36	30	90	Both,	August 13 and 20, 1882,	Good,	1	0	4	12
Stark Shaft,	5	36	30	90	Both,	August 20, 1882,	Good,	1	0	2	2
Carbon Hill,	6	28	30	70	Both,	December 15, 1882.					
New Shaft, Lackawanna,	2 portable boilers.			60	Both,	August 15, 1882.	Good.				
No. 2 Shaft, Dunmore,	3	36	30	80	Both,	November 5, 1882,	Good.				
Dunmore Breaker,	3	36	30	80	Both,	November 5, 1882,	Good,	2	0	2	4
Dunmore Screens,	3	36	30	80	Both,	November 5, 1882,	Good,		4	2	5
No. 3 Shaft, Gypsey Grove,	7	36	30	80	Both,	November 5 and 7, 1882,	Good,	2	0	2	4
No. 4 Shaft, Gypsey Grove,	3	36	30	80	Both,	November 5, 1882,	Good.				
	146	5,154	....	...	....	..	.....	11	6	32	56

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Pyne Shaft,	9	30	34	85	Both,	December, 1882,	Good,	4	2	4	2
Pyne Shaft,	3	36	34	85	Both,	December, 1882,	Good.				
Taylor Shaft,	12	30	34	75	Both,	August, 1882,	Good,	2	2	3	2
Taylor Shaft,	4	40	34	75	Both,	August, 1882,	Good.				

Archbald Shaft,	10	36	34	85	Both,	August, 1882,	Good,	3	2	2	2
Sloan Shaft,	12	30	34	85	Both,	September, 1882,	Good,	2	2	4	2
Continental Shaft,	9	40	34	75	Both,	October, 1882,	Good,	2	4	2	2
Hampton Shaft,	13	36	34	80	Both,	November 12, 1882,	Good,	3	2	4	3
Hampton Air-shaft,	3 locomotive flue boilers.					November 12, 1882,	Good.				
Dodge Shaft,	9	36	34	80	Both,	December, 1882,	Good,	2	2	2	1
Dodge Breaker,	3	30	34	80	Both,	December, 1882,	Good.				
Scranton Coal Company,	8	32	34	75	Both,	September, 1882,	Good,	2	2	2	2
Scranton Coal Company,	4	30	34	75	Both,	September, 1882,	Good,				
Bellevue Shaft,	12	36	34	85	Both,	July, 1882,	Good,	4	2	2	2
Bellevue Slope,	12	38	34	85	Both,	July, 1882,	Good.				
Central Shaft,	12	30	34	85	Both,	August, 1882,	Good,	2	2	2	2
Central Air-shaft,	6	36	34	85	Both,	July, 1882,	Good.				
Central Air-shaft,	4	40	34	85	Both,	December, 1882,	Good.				
Hyde Park Shaft,	6	36	34	75	Both,	July, 1882,	Good,	3	2	4	2
Hyde Park Shaft,	3	40	34	75	Both,	July, 1882,	Good.				
Oxford Shaft,	9	40	34	70	Both,	November, 1882,	Good,	2	2	2	2
Diamond Shaft, No. 2, G. V.,	10	40	34	75	Both,	September 21, 1882,	Good.				
Diamond Shaft, No. 2, E. V.,	9	30	34	85	Both,	November 13, 1882,	Good.				
Diamond Breaker No. 2,	4	26	30	80	Both,	November 13, 1882,	Good,	2	2	2	2
Diamond Air-shaft,	9	30	34	85	Both,	November 13 and 20, 1882,	Good.				
Diamond Air-shaft,	3	40	34	85	Both,	November 23, 1882,	Good.				
Diamond Slope, No. 2,	6	38	34	80	Both,	November 2 and 8, 1882,	Good,	3	2	4	3
Diamond Slope, No. 2,	4	36	34	80	Both,	November 16, 1882,	Good.				
Diamond Tripp's Slope,	3	40	34	80	Both,	December 13, 1882,	Good.				
Diamond Tripp's Slope,	4	30	30	80	Both,	December 13, 1882,	Good.				
Brisbin Shaft,	12	30	34	80	Both,	November, 1882,	Good,	4	2	2	2
Cayuga Shaft,	12	30	34	80	Both,	November, 1882,	Good,	2	2	2	2
Storr's Shaft,	6	40	34	85	Both,	August, 1882,	Good.				
	245	8,292						42	34	43	33

DELAWARE AND HUDSON CANAL COMPANY.

Jermyn, No. 3, Shaft,	18	36	34	80	Both,	October 11, 1882,	Good,	2	2	4	2
Von Storch Slope,	26	36	34	80	Both,	October 9, 1882,	Good,	2	4	8	4
Leggett's Creek Shaft,	14	36	34	80	Both,	October 22, 1882,	Good,	2	2	3	2
Marvine Shaft,	15	36	34	80	Both,	October 25, 1882,	Good,	2	2	4	2
Eddy Creek Shaft,	9	36	34	80	Both,	November 26, 1882,	Good,	2	2	4	4
No. 2, Olyphant,	9	36	34	80	Both,	November 26, 1882,	Good,	2	. .	2	2
Grassy Island Shaft,	16	36	34	80	Both,	November 26, 1882,	Good,	2	2	4	2
White Oak Mines,	6	36	34	60	Both,	November 23, 1882,	Good,	2	4	2	4
Jermyn, No. 1, Shaft,	17	36	34	75	Both,	November 25, 1882,	Good,	2	4	2	4
Jermyn, No. 2, Slope,	4	36	34	60	Both,	November 11, 1882,	Good,	2	. .	1	2
Powderly Slope,	9	36	34	60	Both,	November 20, 1882,	Good.				
No. 1 Shaft, Carbondale,	7	36	34	60	Both,	November 14, 1882,	Good.				
No. 3 Shaft, Carbondale,	9	36	34	60	Both,	November 14, 1882,	Good.				
Coal Brook Mines,	7	36	34	60	Both,	November 4, 1882,	Good,	1	2	6	8
Rackett Brook Breaker,	5	36	34	75	Both,	November 4, 1882,	Good,	2	2	4	2
	171	6,156						23	26	14	38

TABLE No. 8.—*Continued.*

NAME OF COLLIERY.	HOISTING ENGINES.		BREAKER ENGINES.		FAN ENGINES.		PUMPING ENGINES.		DONKEY-PUMP ENGINES.		HOISTING ENGINES IN MINES.		Total number of engines.	Total horse-power.
	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.		
Everhart,	2	30	1	60	. . .	. . .	1	40	2	25	. . .	. . .	6	155
Eagle Shaft,	1	40	1	35	1	20	. . .	. . .	3	40	1	25	7	160
Tompkins Shaft,	2	50	1	20	1	15	1	30	1	30	1	25	7	170
Fairmount Shaft,	1	40	1	16	1	10	. . .	. . .	. . .	. . .	1	6	4	72
Seneca Slope,	1	60	1	40	1	20	1	60	2	20	1	30	7	230
Ravine Shaft,	1	60	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	60
Twin Shaft,	1	50	1	30	1	35	. . .	. . .	4	110	1	30	8	255
Beaver Slope,	1	20	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	20
Butler Shaft,	1	40	1	40	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2	80
Butler Shaft,	. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	20	1	20
Mosier Shaft,														
Heidelberg Shaft,	1	60	1	60	1	30	. . .	. . .	2 { 1 / 1	15 / 60	1	30	6	255
Ontario Breaker,	4	500	. .	. . .	1	60	. . .	. . .	2	75	. . .	. . .	7	635
Phœnix Shaft.	2	100	1	50	. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	3	150
Columbia Tunnel,	1	90	1	30	3	51	. . .	. . .	3	95	. . .	. . .	8	266
Stetler Shaft,	. . .	. . .	1	50	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	50
Hillside Shaft,	2	200	1	80	1	40	. . .	. . .	3	60	. .	. . .	7	380
Spring Brook,	2	80	1	35	1	35	. . .	. . .	4	110	1	30	9	290
Greenwood Slope,	6	180	1	30	1	30	. . .	. . .	4	25	1	25	13	290
Greenwood Shaft,	2	80	. . .	. . .	. . .	. . .	1	60	1	8	. . .	. . .	4	148
Phinney Breaker,	2	120	. . .	. . .	1	40	. . .	. . .	1	8	. . .	. . .	4	168
Sibley Shaft,	. . .	. . .	1	60	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	60
National Slope,	2	80	1	50	2	40	. . .	. . .	4	70	. . .	. . .	9	240
National Shaft,	1	52	1	45	. . .	. . .	. . .	. . .	2	25	. . .	. . .	4	122
Meadow Brook Shaft,	1	154	. . .	. . .	1	40	. . .	. . .	2	40	. . .	. . .	4	234
Meadow Brook, Inside,	1	100	. . .	. . .	1	26	. . .	. . .	2	90	1	52	5	268
Meadow Brook Breaker,	. . .	. . .	1	76	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	76
Bridge Slope,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	15	1	15
Mount Pleasant Slope,	3	90	1	30	2	30	. . .	. . .	4	40	3	30	13	220
Capouse Shaft,	2	100	1	40	. .	. . .	. . .	. . .	4	100	. . .	. . .	7	240
Pine Brook Shaft,	4	270	1	40	2	70	1	90	2	35	. . .	. . .	10	505
Fair Lawn Slope,	2	60	1	60	1	60	1	60	2	40	. . .	. . .	7	280
Green Ridge Slope,	2	65	1	35	1	45	. .	. .	1	8	. . .	. . .	5	153
	5	255	1	60	1	25	2	60	1	20	. . .	. . .	10	420

Roaring Brook Shaft,	2	50	1	40			1	90					4	180
Lucas Shaft,	2	200	1	75	1	75							4	350
Elk Hill Mines,			1	40									1	40
Pancoast Breaker,			1	60									1	60
Pancoast Slope,	2	90			1	30			4	150			8	270
Throop Shaft,	2	300	1	100					3	90			6	490
Throop Air-shaft,	2	200			1	80							3	280
Lackawanna Coal Company's Colliery,	2	175	1	80	1	80			1	45			5	380
Filer's Shaft,	2	80	1	70					2	30			5	180
Filer's Slope,	2	80	1	60					4	60			7	200
Filer's Fan Shaft,					1	60							1	60
Pierce Coal Company's Mine,					1	20							1	20
Pierce Coal Company's Breaker,			1	40									1	40
Eaton Colliery Breaker,	3	90	1	25									4	115
Eaton Colliery Slope,					2	40							2	40
Eaton New Shaft,	1	20											1	20
Erie Shaft,	2	60	1	35	1	30	1	60	4	192	2	25	11	402
Keystone Tunnel,			1	20									1	20
Belmont Tunnel,			1	40	1	25							2	65
	78	4,371	38	1,757	35	1,162	10	550	74	1,716	16	343	251	9,899

PENNSYLVANIA COAL COMPANY.

Slope No. 2,	1	40							3	190			4	230
Shaft No. 6,	1	40	1	30					1	60	1	20	4	150
Shaft No. 5,	1	40			1	20			1	10			3	70
Shaft No. 11,	1	40			1	20			1	10			3	70
Shaft No. 7,	1	40			1	20	1	120	2	80	2	40	7	300
Slope No. 4,	5	80							3	60			8	140
Shaft No. 4,	1	40			1	20	1	40	1	20	2	40	6	160
No. 2 Breaker,			1	40									1	40
Tunnel No. 1,	2	40							2	50			4	90
Slope No. 6,	1	30											1	30
Shaft No. 1,	2	60			1	20							3	80
Shaft No. 8,	1	40	1	25									2	65
Shaft No. 10,	4	140	1	30	1	20	2	70	2	45			10	305
Shaft No. 9,	1	40			1	20			1	60			3	120
Barnum Shaft, No. 1,	2	80	1	40	1	25	1	40	1	10	2	20	8	215
Barnum Shaft, No. 2,	1	40			1	25			1	10	2	20	5	95
Shaft No. 12,	1	40											1	40
Shaft No. 13,	1	40			1	20	2	80	2	40			6	180
Law Shaft,	1	40	1	40	1	20	1	40	3	130			7	270
Stark Shaft,	1	40	1	30					1	10	4	50	7	130
Carbon Hill,	2	70					1	45	1	25			4	140
New Shaft, Lackawanna,	2	30							1	10			3	40
No. 2 Shaft, Dunmore,	1	90					1	90	2	9	2	98	6	287
Dunmore Breaker,			1	30									1	30
Dunmore Screens,			1	53					1	50			2	103

TABLE No. 8.—*Continued.*

PENNSYLVANIA COAL COMPANY.

NAME OF COLLIERY.	HOISTING ENGINES.		BREAKER ENGINES.		FAN ENGINES.		PUFFING ENGINES.		DONKEY PUMP ENGINES.		HOISTING ENGINES IN MINES.		Total number of engines.	Total horse-power.
	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.		
Shaft No. 3, Gypsey Grove,	1	70	1	70	. . .	. . .	2	160	1	9	1	40	6	349
No. 4 Shaft, Gypsey Grove,	1	70	. . .	. . .	1	35	. . .	. . .	. . .	. . .	. . .	. . .	2	105
	36	1,280	10	388	12	265	12	685	31	888	16	328	117	3,834
DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.														
Pyne Shaft,	2	300	1	60	1	40	1	150	1	10	1	15	7	575
Taylor Shaft,	3	160	1	60	2	100	1	90	2	35	1	30	10	475
Archbald Shaft,	2	90	1	60	1	40	. . .	. . .	3	150	. . .	. . .	7	340
Sloan Shaft,	2	120	1	60	1	40	. . .	. . .	3	66	. . .	. . .	7	286
Continental Shaft,	2	90	1	50	1	40	1	90	4	100	. . .	. . .	9	380
Hampton Shaft,	2	80	1	60	1	40	1	90	1	40	1	30	7	340
Dodge Shaft,	2	90	1	60	. . .	. . .	1	90	. . .	. . .	. . .	. . .	4	240
Scranton Coal Company,	2	120	1	60	1	40	. . .	. . .	2	37	. . .	. . .	6	257
Bellevue Shaft,	2	120	1	60	1	60	1	90	2	16	2	90	9	436
Bellevue Slope,	4	230	. . .	. . .	. . .	. . .	. . .	. . .	5	81	1	50	10	381
Central Shaft,	2	90	1	60	1	40	2	300	. . .	. . .	1	30	7	520
Central Air-shaft,	2	90	. . .	. . .	1	40	. . .	. . .	3	90	. . .	. . .	6	220
Hyde Park Shaft,	2	90	1	60	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	3	150
Oxford Shaft,	2	90	1	60	1	60	. . .	. . .	2	50	. . .	. . .	6	260
Diamond Shaft, No. 2, G. V.,	2	80	. . .	. . .	. . .	. . .	1	90	1	90	1	30	5	290
Diamond Shaft, No. 2, E. V.,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	30	1	30	2	60
Diamond Breaker No. 2,	. . .	. . .	1	60	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	60
Diamond Air-shaft,	. . .	. . .	. . .	. . .	1	40	. . .	. . .	3	90	. . .	. . .	4	130
Diamond Slope, No. 2,	1	60	1	60	. . .	. . .	. . .	. . .	3	103	1	30	6	253
Diamond Tripp Slope,	2	50	. . .	. . .	. . .	. . .	. . .	. . .	3	190	. . .	. . .	5	240
Brisbin Shaft,	2	120	1	60	1	40	. . .	. . .	2	120	. . .	. . .	6	340
Cayuga Shaft,	2	120	1	60	1	40	2	240	1	20	. . .	. . .	7	480
Storr's Shaft,	1	60	. . .	. . .	. . .	. . .	. . .	. . .	2	30	. . .	. . .	3	90
	41	2,270	16	960	15	660	11	1,230	44	1,348	10	335	137	6,803

Jermyn, No. 3, Shaft,	4	250	1	61	2	82			4	90	4	20	15	503
Von Storch Slope,	5	296	1	61	2	121			3	150	2	10	13	638
Leggett's Creek Shaft,	3	200	1	61	1	49	1	70	1	10	2	10	9	400
Marvine Shaft,	3	200	1	61	1	49	1	120	2	22	2	10	10	462
Eddy Creek Shaft,	2	117	1	61	2	117					2	10	7	305
No. 2, Olyphant,	3	150	1	36			1	77	3	87			8	350
Grassy Island Shaft,	2	72	1	61	2	117	1	77	6	166	2	10	14	503
White Oak Mines,			1	61									1	61
Jermyn, No. 1, Shaft,	3	148	1	56	1	59			7	191	1	33	13	478
Jermyn, No. 2, Slope,	2	72	1	36									3	108
Powderly Slope,	2	117			1	16			2	70			5	203
No. 1 Shaft, Carbondale,					1	36	1	61					2	97
No. 3 Shaft, Carbondale,	2	117			1	42	2	100	1	10			6	269
Coal Brook Mines,	1	56	1	77	1	36			3	32			6	201
Rackett Brook Breaker,			1	77									1	77
	32	1,795	12	709	15	715	7	505	32	828	15	103	113	4,655

TABLE No. 8.—*Continued.*

RECAPITULATION.

NAME OF COLLIERIES.	No. of boilers.	Length in feet.	No. of main rolls.	No. of pony rolls.	No. of main screens.	No. of pony screens.	HOISTING ENGINES.		BREAKER ENGINES.		FAN ENGINES.		PUFFING ENGINES.		DONKEY PUMP ENGINES.		HOISTING ENGINES IN MINES.		Total number of engines.	Total horse-power.
							Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.	Number.	Horse-power.		
Miscellaneous Coal Companies,	322	10,150	60	56	81	65	78	4,371	38	1,757	35	1,162	10	550	74	1,716	16	343	251	9,899
Pennsylvania Coal Company,	146	5,154	11	6	32	56	36	1,280	10	388	12	265	12	685	31	888	16	328	117	3,834
Delaware, Lackawanna and Western Railroad Co.,	245	8,292	42	34	43	33	41	2,270	16	960	15	660	11	1,230	44	1,348	10	335	137	6,803
Delaware and Hudson Canal Company,	171	6,156	23	26	44	38	32	1,795	12	709	15	715	7	505	32	828	15	103	113	4,655
Total,	884	29,752	136	122	200	192	187	9,716	76	3,814	77	2,802	40	2,970	181	4,780	57	1,109	618	25,191

There has been an increase of 85 new boilers and 65 new engines, giving an increase over last year of 2,616 horse-power.

In addition to the above, there are working at the collieries of the district thirteen (13) mine locomotives.

LUZERNE AND CARBON COUNTIES.

SOUTHERN DISTRICT.

To His Excellency Robert E. Pattison,

Governor of the Commonwealth of Pennsylvania:

Sir: In accordance with the twenty-second section of the act of the Assembly, entitled "An act providing for the health and safety of persons employed in and around coal mines," I have the honor of submitting for your perusal my second annual report of the Southern District of Luzerne and Carbon counties, for the year ending December 31, 1882.

The total number of accidents during the year was one hundred and seventy-six, from which forty persons lost their lives, leaving nineteen widows and seventy-eight orphans to mourn the loss of husbands and fathers.

Of the forty fatal accidents, thirty-two, or eighty per cent., happened within the mines, and eight, or twenty per cent., on the surface. Of the thirty-two fatal accidents inside, twenty-four, or seventy-five per cent., were caused by falls of some kind, of which I speak more fully in the report under that head; five, or fifteen and sixty-three hundreths per cent., were caused by mine cars; three, or nine and four hundredths per cent., by various causes.

The total production of this district for the year 1882, was 5,360,497 tons, an increase over the production of 1881 of 322,549 tons, this being the largest production ever known in this district. The production per life lost was 134,012 tons, against a production of 107,190 tons for the year 1881, an increase of 27,822 tons per life lost in mining in 1882.

The average number of days worked in this district was two hundred and twenty-one, or about three quarter time.

Working full time, this district can produce over seven million tons.

This report contains, beside the usual tables, several other tables of minor importance; also, tables showing the number killed in and around the mines in each district, with the number of widows and orphans, for each year of the last ten years; also, a table of the total number killed in all the districts, with the total number of widows and orphans in the

last ten years; also, the total production, and the production for each life lost, and for each widow and orphan. I have made brief notes on the necessity of having a hospital for this district; on the great needs of education and suitable trades for the young that are daily incapacitated for mine work in the different districts; and I have tried to show that something should be done so as to extend substantial aid for the widows and orphans that are daily thrown upon their own resources in this world through the loss of husbands and fathers in and about the coal mines.

My general remarks on accidents, especially those caused by falls of coal, slate and roof, I trust I have made worthy of the perusal of all those engaged in the hazardous business of mining coal.

A table has been prepared to show the number and size of the different fans erected in this district during the year 1882.

Respectfully submitted,

JAMES E. RODERICK,

HAZLETON, *March 1, 1883.* *Inspector of Coal Mines.*

General Condition of Collieries.

The ventilation in the majority of collieries in this district has somewhat improved during the year 1882, and in a great many of them there has been a radical change for the better.

This improvement has been brought about by continual vigilance, and more rigid discipline on the part of mine-bosses, in compelling the miners to drive the airways and cross-cuts according to the standard size, and as regular and as even as possible; also by introducing more main doors, and having them properly attended; but the introduction of new fans has been the greatest reason for this improvement in ventilation. Eleven new fans have been erected in this district during the year, the majority of them in places where fans had never been used before.

The operators of the collieries where these fans have been introduced, though some of them charged the inspector with asking too much in the way of improvement, are more than pleased with the superiority of fan ventilation over that effected by steam-exhaust or small furnaces.

The introduction of these new fans has changed the standing of several of the collieries in point of ventilation, putting the collieries which were the most poorly ventilated in 1881 among the best in 1882.

As most of the mines in this district have been provided with fans, the only drawback is the small size of the airways, but as they are up to the requirements of the law, it is very hard to get the companies to enforce a larger standard. If the size of the airways could be increased in mines that do not generate explosive gases to an area of about forty feet, a much larger amount of air could be obtained with the present power, which I claim is ample in most places for securing the same first-class ventilation that has been obtained in all collieries that have respectable-sized airways, and as soon as the standard size is raised to forty feet, (fifty or sixty feet

would be better,) the law that provides sixty-six cubic feet of air per minute, per person employed, will be of no further use.

A small airway is the main obstruction to good ventilation.

In mines generating explosive gases, we have no trouble in getting the airways large enough, since to procure ample ventilation to dilute and render these gases harmless, large sized airways are a necessity, and I have often wished that every colliery in this district generated just enough gas to make mine-bosses and superintendents very exacting about the size of airways. Yet I must admit that the ventilation in the great majority of the collieries in this district is fair, (yet small airways is the one reason why it is not much better,) excepting in those collieries that are being robbed preparatory to being abandoned. Most of these are beyond any improvement in that line, (crop holes being numerous and workings all connected) unless large air-tight boxes are built to the face of the several gangways, and up to the several chambers, these boxes to be connected with a force or suction fan at the surface, or at some other convenient point.

But this is more than we can ask or expect of any company, as in most cases it would take miles of such boxes, and the companies would sooner abandon those places than incur this great expense.

Ambulances and Stretchers.

The law providing for ambulances and stretchers has been complied with in this district. Every colliery has been provided with stretchers, and each company that was notified provided ambulances, one company getting three, two companies two each, and the others one, which are placed as the law requires.

The total number in this district is sixteen, each costing on an average two hundred and fifty dollars.

The operators of this district showed great readiness to comply with the spirit of this law, probably from humane feeling, since they could not have been forced to procure ambulances *and* stretchers by the wording of the act.

Telephones.

Into all the deep slopes where there were no speaking-tubes, telephones of different kind were placed last year, and all are giving satisfaction to employer and employé. The deepest of these slopes is Hazleton mine, which is over two thousand three hundred feet, and the pitch irregular, yet the telephone is a success.

The companies that have introduced telephones into their mines are A. Pardee & Co., Linderman, Skeer & Co., T. S. McNair & Co., Ebervale Coal Co., and G. B. Markle & Co.

Most of the companies in this region have telephone connection between their main offices and their different collieries, and the office of the inspector is also connected with these main offices.

All the colleries in this district are provided with either a telephone or speaking-tube.

Explosion of Steam Boilers.

This district was visited by one boiler explosion during the year, but luckily there were no lives lost, and comparatively very little damage done to property. That no lives were lost is due more to good luck than good management, as a number of men and boys were near when the explosion took place.

In the investigation of the cause of the accident I failed to find anything definite, as one of the firemen as usual had *just* before the explosion tried the water, and found it at the middle gauge. There was nobody that could or *would* contradict, but I have my doubts of the truthfulness of his story. The boilers were evidently abused by him or the other firemen, as the iron was of good quality and nearly of full thickness.

My opinion is that the water was allowed to get too low in the boilers, which became overheated, and when the pump was put on the cold water caused the iron to contract, hence the explosion.

I feel it my duty to state that it is a wonder that more explosions do not occur, as the firemen attending them are very often the most ignorant of any class employed in and about the mines. As it needs great muscular power to do this work, sometimes it is hard to get trustworthy men to undertake it, unless they can see a chance of promotion to be engineers in the near future.

I have often been afraid to go into some boiler houses, knowing as I did that the men in charge were totally incompetent, having no idea of the danger incurred in pumping cold water into overheated boilers. All the companies are doing their duty in relation to boilers as far as the law demands.

The boilers are examined and reported every six months, in the early part of January and July, and if found unsafe they are immediately repaired.

Amend the Ventilation Law.

The ventilation law, though it has been the means of largely diluting the obnoxious gases in the mines and bettering the condition of mines and miners in general, is in many respects in need of a complete and radical revision, and I hope that the time is not far distant when the State Legislature will formulate a plan for its revisement. Many of its sections, if construed according to the letter of the law, would not be productive of that welfare of the miner which is really contemplated by the spirit of the statute, though not expressed in the wording. I am of the opinion that a more stringent law, with stronger provisions for the welfare of all working inside of the mines, would be more in conformity with the danger experienced in their underground toil. An examination of the ventilation law will convince any expert in mining that many of its sections could be made more forcible by completely revising them.

TABLE No. 1.—*Exhibits the number of deaths in the different classes of employés inside and outside of the mines, and causes thereof:*

CAUSES OF DEATHS INSIDE OF MINES.	Miners.	Miners' laborers.	Drivers.	Total.	Total from all causes.
By falls of coal,	12	5	...	17	
By falls of slate,	4	2	....	6	
By falls of roof,	1	....	....	1	
By mine cars,	1	1	3	5	
By falling into slope,	1	...	....	1	
By premature blast,	...	1	...	1	
By explosion of gas,	1	..	...	1	
Total inside,	20	9	3	32	32

CAUSES OF DEATHS OUTSIDE OF MINES.	Laborers.	Slate pickers.	Total.	
By railroad cars near breakers,	3	....	3	
By timber falling from flat car,	1	....	1	
By falling into chute at stripping,	1	....	1	
By fall of earth at stripping,	1	...	1	
By breaker machinery,	....	1	1	
By fragment of runaway car on plane,	1	..	1	
Total outside,	7	1	8	8
Total inside and outside,	....	....	....	40

TABLE No. 2.—*Gives the total number of each class of employés, the number of deaths in each class, and the ratio of each class employed per life lost, inside and outside of the mines.*

CLASSES OF EMPLOYEES INSIDE OF THE MINES.	Number of each class of employés.	Number of death in each class.	Ratio employed per life lost.
Total number of miners,	2,928	20	146.4
Total number of miners' laborers,	1,598	9	177.55
Total number of drivers and runners,	639	3	213
All other employés,	1,481		
	6,646	32	207.68+

CLASSES OF EMPLOYEES OUTSIDE OF THE MINES.			
Total number of laborers,	2,209	7	315.57
Total number of slate-pickers,	2,282	1	2,282
All other employés,	1,161		
	5,652	8	707,25

The total number of employés inside of the mines for the year 1882 was 6,646, of whom 32 lost their lives, making the ratio of persons employed per life lost, 207.68, which is a much better showing than for the year 1881, when one out of every 155.78 lost their lives inside of the mines.

The number employed outside of the mines, for the same year, was 5,652; from that number 8 lost their lives, making the ratio of persons employed per life lost, 707.25, which is a worse showing than for the year 1881, when the ratio was 833.16 for every life lost outside of the mines.

The total number of employés, inside and outside of the mines, was 12,298; the number of lives lost, inside and outside of the mines, were 40; making the ratio of persons employed 307.45 for each life lost, which, on the whole, is a better showing than for the year 1881, when one life was lost for every 242.25 employed.

TABLE No. 3—*Exhibits the number of severe accidents in the different classes of employees, inside and outside of the mines, and the causes thereof.*

CAUSES OF SEVERE ACCIDENTS INSIDE.	Miners.	Miners' laborers.	Company laborers.	Drivers.	Door-boys.	Pump-men.	Total.	Total from all causes.
By falls of coal, slate, and roof,	33	12	1	2	..	...	48	
By mine cars,	3	5	5	8	1	2	24	
By premature blasts,	8	1	..	...	...	..	9	
Miscellaneous,	..	1	1	..	..	1	3	
Total inside,	44	19	7	10	1	3	84	84

CAUSES OF SEVERE ACCIDENTS OUTSIDE.	Laborer.	Driver.	Slate-picker.	Total.	
By mine cars,	9	..	...	9	
By machinery,	3	...	1	4	
Miscellaneous,	3	2	...	5	
Total outside,	15	2	1	18	18
					102

Education for the Young who are Crippled in and about the Coal Mines.

The attention of all fair-minded people is called to the great necessity of providing education and suitable trades for the young men and boys that are daily incapacitated to earn their bread by the "sweat of their brow," as usual.

There is an army of these cripples in the several districts of the anthracite coal fields of Pennsylvania, some minus a hand, others a leg or foot, and exceptional cases are to be found wanting both an arm and leg. They are pitiable objects, indeed, when seen before the break of day, on winter mornings, on the road to the several breakers.

The young men and boys in and around the coal mines are as bright and intelligent as any class having the same opportunities, and I claim that, if there was a way to educate, and give them suitable trades and situations, according to their ability, our State would be blessed for the outlay incident to the work.

Pennsylvania has provided nobly for the orphans of her gallant soldiers, and, as these are nearly all of age, is it not possible to open the doors of this noble institution of learning for the young that are crippled in and about the coal mines, and all the young that are crippled in every other calling throughout the State?

Through a thorough system of education these unfortunates could be prepared to hold any position in life that does not require manual labor.

TABLE No. 4.—*Gives number of each class of employés, the number of severe injuries in each class, and the ratio of each class employed, per severe injury inside and outside of the mines.*

Classes of Employees Inside.	Number of each class of employés.	Number severely injured in each class.	Ratio employed per severe injury.
Number of miners employed,	2,928	44	66.54
Number of miners' laborers employed,	1,598	19	84.10
Number of company laborers employed,	990	7	141.42
Number of drivers and runners,	639	10	63.9
Number of door boys employed,	284	1	284
Number of pumpmen and engineers employed,	134	3	44.66
Number of all other employés,	73		
	6,646	84	79.12
Classes of Employés Outside:			
Number of laborers employed,	2,209	15	147.26
Number of drivers employed,	161	2	80.5
Number of slate-pickers employed,	2,282	1	2,282
Number of all other employés,	1,000		
	5,652	18	314

The number of severe accidents inside of the mines for the year 1882 was eighty-four, which can be seen by referring to table No. 4, where it is shown that one person was severely injured for every 79.12 persons employed. The nature of their injuries is explained in table No. 7.

The number severely injured on the surface for the same year was eigh-

teen, showing that one person sustained severe injuries for every 314 employed.

By referring to table No. 5, it can be seen that out of the total number of non-fatal accidents—136—76, or nearly sixty per cent. were caused by falls; a large number of these, as well as the accidents from mine cars, could have been avoided by a little care and forethought.

TABLE No. 5.—*Gives the total number of non-fatal accidents, the number of each class, and the causes thereof.*

CAUSES OF ACCIDENTS INSIDE OF THE MINES.	Injuries, but no bones broken.	Legs fractured.	Collar-bone fractured.	Arms fractured.	Fingers fractured.	Feet fractured.	Molar bone fractured.	Hip dislocated.	Ankle dislocated.	Total.	Total from all causes.
By falls of coal, slate and roof,	40	13	. .	2	2	2	. .	. .	. .	59	
By mine cars, ...	15	3	2	4	2	1	. .	3	. .	30	
By explosion of gas, ...	8	. .	. .	. .	. .	. .	. .	. .	.	8	
By premature blast, ...	8	.	. .	. .	. .	. .	1	. .	. .	9	
Miscellaneous, ...	5	1	. .		. .	1	.	1	2	10	
	76	17	2	6	4	4	1	4	2	116	116
Outside of Mines:											
By mine cars, ...	5	. .	. .	1	1	. .	. .	. .	1	8	
By machinery, ...	2	1	. .	. .	1	. .	. .	. .	.	4	
Miscellaneous, ...	7	1	. .	. .	. .		. .	. .	. .	8	
	14	2	. .	1	2	. .	. .	. .	1	20	20
											136

Hospitals.

One of the most needed institutions in the central part of every coal district is a hospital, where the injured in and around the mines can receive proper and prompt treatment. Out of the one hundred and thirty-six injured in this district last year, about one hundred were severely injured, and they could have been best cared for in a hospital adjacent to their homes.

Mine houses are decidedly limited in capacity, having generally two rooms on the first floor and two rooms on the second, making four rooms in all. Often three of these are used for bedrooms, as the workingmen generally have large families, ranging from six to ten. When the number is ten, there is no spare room in houses of only four rooms.

The above are the best class of mine houses; there are a large number of one and one-half story houses, with sometimes three and other times only two rooms for the employé and his family. It would be right to state here that great improvements have been made in mine houses during the last six years, and if they keep on improving, I have great hope that

the mining classes will have respectable houses, well built and well ventilated, in the near future.

It can be seen at a glance that families of eight or ten persons in the best of these houses have no place to take proper care of injured persons, as they are often forced to, at great inconvenience and annoyance.

The unfortunates that are constantly sustaining severe injuries in and about the mines are pitiable objects; penned in these small rooms, with stifling atmosphere, too much even for a healthy person to bear, to say nothing of the injured, yet the scores of severely injured have to bear it, and often on a very scanty fare.

The philanthropist will ask, Why are not the severe cases sent to the Pennsylvania Hospital, Philadelphia, which is open to all, and all are welcome? There are numerous reasons, the most potent, perhaps, being that the injuries are often of such serious character as to call for prompt attention, and that as near the place of accident as possible.

The Philadelphia hospital means a period of from five to ten hours of suffering for the victim before any relief is possible. If amputation is necessary, decidedly that could be accomplished with hopes of better result at or near the place of accident.

The loss of blood for five or ten hours is of vast consequence to the sufferer. Many of the severely injured of this district last year preferred to be taken away to distant hospitals, knowing that they could get better treatment and better fare than at their limited homes and limited tables, and during the year several of these have died from divers causes.

I think that the southern district of Luzerne and Carbon counties deserves something substantial from our great State. The district comprehends an area of about twenty square miles, comprising many mining villages, hemmed in on the top of the mountains, nearly eighteen hundred feet above the level of the sea, and cut off from the outside cities and towns, except as connected by an occasional train. As Hazleton is the largest of these coal towns, and also the most centrally located, I think it the proper place for the hospital for this district.

This town is proverbially a healthy place, and being supplied with plenty of fresh water, I believe that the injured would recuperate better at or near their homes than they would in cities from one thousand to sixteen hundred feet lower than this town.

Other districts have hospitals built and sustained by the public purse; why not include Hazleton in this number?

Outside of being the central town of this mining district, it is also the central town of a great railroad industry. The Lehigh Valley Railroad has large shops here, and there are hundreds of mechanics of every description living in the place.

A hospital here would be a great boon for the unfortunates on this road as well as those of the mines.

TABLE No. 6—*Shows the number of lives lost, the number of widows, and the number of orphans caused by said loss in each district for the last ten years.*

Year.	Districts.	No. of deaths.	Yearly totals.	No. of widows.	Yearly totals.	No. of orphans.	Yearly totals.
1872	First,	23		9		41	
	Second,	42		25		68	
	Third,	32		15		60	
	Middle,	40		21		61	
	East,	67		39		119	
	South,	25		12		33	
			229		121		382
1873	First,	29		15		61	
	Second,	53		31		141	
	Third,	44		28		98	
	Middle,	46		18		60	
	East,	56		30		78	
	South,	38		20		48	
			266		142		486
1874	First,	35		14		65	
	Second,	44		20		71	
	Third,	26		19		49	
	Middle,	57		28		71	
	East,	69		38		112	
	South,	31		15		29	
			262		134		397
1875	First,	28		17		62	
	Second,	26		11		48	
	Third,	38		13		49	
	Middle,	63		23		44	
	East,	62		36		118	
	South,	21		12		37	
			238		112		358
1876	First,	28		15		75	
	Second,	27		14		52	
	Third,	37		21		62	
	Middle,	55		26		69	
	East,	44		21		79	
	South,	37		21		71	
			228		118		408
1877	First,	29		18		63	
	Second,	33		22		74	
	Third,	28		17		56	
	Middle,	38		22		65	
	East,	40		29		134	
	South,	26		15		59	
			194		123		451
1878	First,	14		8		30	
	Second,	26		14		58	
	Third,	47		29		95	
	Middle,	36		21		57	
	East,	36		19		72	
	South,	30		17		62	
			189		108		374
1879	First,	24		8		23	
	Second,	43		22		41	
	Third,	46		28		91	
	Middle,	65		38		140	
	East,	59		31		125	
	South,	25		15		41	
			262		142		461
1880	First,	15		9		37	
	Second,	39		13		38	
	Third,	34		22		71	

TABLE No. 9—Continued.

Year.	Districts.	No. of deaths.	Yearly totals.	No. of widows.	Yearly totals.	No. of orphans.	Yearly totals.
	Middle,	51		22		61	
	East,	37		25		83	
	South,	26		14		52	
			202		105		342
1881	First,	18		8		21	
	Second,	34		18		60	
	Third,	48		24		94	
	Middle,	79		38		110	
	East,	47		26		97	
	South,	47		17		60	
			273		131		442
	Totals in ten years,		2,343		1,236		4,101

Provide for the Widows and Orphans.

Another most important subject in mining towns is how to provide for the widows and orphans of the men who are killed in and about the coal mines. Some few miners have been able to provide a little for their families in case of death, but the majority have not, leaving their families completely destitute.

All men conversant with this subject are aware that the widows and orphans are tolerably cared for, for a few months. Something being given by the operator, a little by the miner's friends; and relatives, too, are kind and sympathetic, but in a few months all these feelings cool off, and the widow and her orphans are forced to realize the stern reality that they are left all alone in the world.

Justice prompts me to say that exceptional cases are to be found where a kind-hearted operator makes special inquiry about the widows and orphans around his works, and takes care that they suffer for nothing, and often they do not know who the good benefactor is. Something general, however, should be done to ease the sufferings of this large class in every community throughout the anthracite coal fields, as more fatal accidents occur in and around the anthracite coal mines of this State than occur elsewhere in any other industry. During the year 1881, 131 widows and 442 orphans were made by the fatal accidents occurring in and around the anthracite coal mines, which is nearly the yearly average for the last ten years.

I do not want to propose any system here, but think the German system well worth the study of any philanthropist and, perhaps, from that a law could be made to answer the need of this class of sufferers. Humanity demands that something be done to relieve them, and that as speedily as possible.

Referring to table No. 6, it can be seen that during the last ten years 1,236 were made widows, and 4,101 were made orphans by the fatal accidents in and around the anthracite coal mines of Pennsylvania.

TABLE No. 7—*Shows the number of lives lost in the six districts combined, with the number of widows and orphans, each year during the ten years preceding 1882, with the total production of each year, and also the number of tons produced each year per life lost, per widow, and per orphan.*

YEAR.	Number of lives lost.	Number of widows.	Number of orphans.	Total production in tons.	Tons produced per life lost.	Tons produced per widow.	Tons produced per orphan.
1872, ...	229	121	382	*21,046,662	91,906	173,939	55,096
1873, ...	266	142	486	22,713,908	85,390	159,957	46,736
1874, ...	262	134	397	21,555,279	82,272	160,860	54,295
1875, ...	238	112	358	21,092,345	88,623	188,324	58,917
1876, ...	228	118	408	19,796,081	86,824	167,763	48,519
1877, ...	194	123	451	22,286,151	114,877	181,188	49,415
1878, ...	189	108	374	18,837,630	99,670	174,422	50,368
1879, ...	262	142	461	27,972,677	106,765	196,990	60,678
1880, ...	202	105	342	25,067,848	124,098	238,741	73,297
1881, ...	273	131	442	30,501,017	111,725	232,832	69,006
	2,343	1,236	4,101	230,869,598	†98,535	†186,868	†56,295

General Remarks on Accidents.

Fully sixty per cent. of the lives lost in this district, during the last year, were caused by falls of some kind, but this is no exception from other years in the past, as accidents from the above causes have been, and are, at present, by far the most fruitful.

A large percentage of these accidents cannot be forseen or guarded against; partings and slips in the roof and coal, which cannot be discerned beforehand, are the frequent causes of those fatal accidents, and often in these cases no previous warning is given before a fall takes place, which often kills or cripples any unfortunates that may be under it. The more experienced and intelligent the miner is, the better he can guard himself against these sudden falls, as he is more competent to trace, (if traceable,) these almost invisible slips and cracks in the roof and coal; but oftentimes the most intelligent and experienced miner fails, and is suddenly killed by a fall that he failed to guard against.

More or less of these accidents, as well as others, will happen as long as coal is mined, as no human agency can guard against all contingencies.

*Have added seven per cent. to the total shipment for each year to make up for home consumption.

† Gives the average for ten years, the average tons per widow, and the tons produced per orphan for the last ten years including 1872 and 1881.

But these accidents can be greatly reduced if all parties concerned—operators, miners, and bosses—would try to do their several duties in the matter.

The operators should, (as the law demands,) appoint inside bosses of intelligence and experience, and give them all the assistants necessary, so each and every place could be visited at least once every working day; and they should insist that the bosses do their duty when visiting the different places, viz: to make a careful examination of the mode of mining; to see that no miner takes unnecessary risk under suspicious pieces; the mode of propping; the number of props put in, and the number immediately needed, etc., and the miner should be held in direct obedience to his instructions.

Prop-timber, cut to the proper lengths, and all other mine supplies, such as planks, boards, etc., should be provided for each and every chamber at the most convenient point, which could, in most cases, be put in, or very near each breast or chamber.

This might be a new departure for some of the operators, but, from past experience, I have no hesitation in saying that the timber wasted by the men at the lumber pile, and the time lost in unloading a few props and planks here and there, will pay financially for this small extra expense. Having the props so convenient, the miner would have no excuse whatever to give if his place was not properly secured. I am positive that many a careful miner otherwise, has lost his life by trying to finish his day's work before going outside for props, as going to the surface during the day means the loss of a half day's pay to the miner, and to save this he takes a great many risks that he should not and would not take if the props were convenient, and in trying to save half a day's pay, pays the penalty by losing his life.

Having the props convenient, the mine-boss could enforce a more rigid discipline in the matter of propping. No party knows better than the mining-boss that the miner cannot afford to lose half a day's pay in going to the surface for props, and he often allows the miner, on that appeal, to work on when promised that props would be taken down next morning, and perhaps the miner's next morning would be in the other world, as the piece he was afraid of had fallen on him.

I have seen several articles in the papers accusing the operators of not providing props on the surface for the miners. As far as the southern district is concerned they are accused wrongfully. In the year and a half that I have spent in the district, I have yet to find the first instance of any place without an adequate supply of prop-timber on the surface. But this timber on surface is often nearly a mile from where it is mostly needed.

I unhesitatingly say that I do not know, neither have I heard, of a single accident in this district, thus far, during my term, that was caused by the want of supply of props on surface, but must say that several men lost their lives by not having the necessary props convenient when needed,

which they could have had, if they had made it a rule to keep a few props on hand for emergencies.

Accidents caused by falls can be divided into several classes; first, accidents through the want of a thorough system of propping. This would apply more directly to falls of roof in Wharton and Buck Mountain seams.

The Wharton has a remarkably good or remarkably bad top, the latter being the rule. Where the top is bad, two rows of props are generally required by the mine boss in a breast which is about nine yards wide. In these places the most danger exists, and the largest percentage killed and injured. In these places there should be, at least, three rows of props, with not more than six feet between, and oftener, if required; and, even then, it would not always be safe, but much safer than now.

As the seam is low, ranging from five to nine feet, small props are all that are necessary; the number, and not the size, of props would give safety, as the thickness of the clod above is only from six to fifteen inches.

B seam generally has good roof, and the propping is often entirely neglected. The miner informs the mine boss, when asked about the roof, that it is perfectly solid and safe, but, perhaps, had not been sounded for a week; and the boss takes the miner's word for it, and goes away satisfied that the place is safe, and often the man that reports his place safe is caught that very day by a fall of roof.

Systematic propping is the only safeguard from falls of roof in this seam, which is greatly neglected on account of the good roof in general, which makes the miners and bosses too often neglectful of duty. In these "safe places," as they are called, there should be two rows of props put in, at a uniform distance of not more than ten feet apart (and nearer, if needed), which would often be the means of saving lives from falls. Systematic propping in Wharton and B seams can never be enforced by our present law.

The most numerous accidents in the B seam come from falls of top coal. This seam is generally mined by blasting out the bottom bench of coal first, undermining the top coal from six to twenty feet; and here lies the greatest danger of mining in this seam. It is to the miner's interest to undermine the top coal twenty feet or more every time, and nobody understands that better than the miner himself, and he often loses his life in the attempt to blast out "another cut."

To guard against the falls of top coal in B, as well as other similar seams of coal, it will be necessary for the miners to use the greatest precaution in not undermining the top any greater distance than it is safe. I claim that they can watch this top coal, which is within their reach, by careful and judicious examination after each and every blast in the bottom coal, and, whenever a suspicious piece is found, to either secure it at once or take it down.

Another danger that men are liable to, is from loose pieces left hanging, after the top coal is blasted. These dangerous pieces can be taken down

with comparative ease and safety, if done when the top coal is piled under the miner's feet; if not done then, it is hard and dangerous work to attempt it afterwards, when this coal is loaded away. The duties of mine bosses are very evident in these, the Wharton and B seams. Each and every working place should be examined at least once per day, and oftener in many instances, and a careful examination should be made.

The mine boss, in every instance, should be satisfied that each place is safe—that is, as safe as coal mining in general can be made, which is a dangerous calling at best; if not safe, proper instructions should be given at once to make it safe. If the mine boss is satisfied that a place cannot be made safe that day, through any cause whatever, his duty would be to send the men out of it, and keep them out of it until he thought the place was safe, or could be made comparatively safe, and that the men would run no extra risk.

I have said what bosses should do, but am well aware that hardly one in twenty has the time to do it; and, probably, it is an injustice to them to hold them responsible for what they cannot do, as their duties are arduous and manifold, they are often made the men of "all work," and have no time to attend to anything properly.

In speaking of the duties of mine bosses, I think that the law demands of them a great deal more than I have said; but, perhaps, if our lawmakers had the experience of the mine bosses, they would willingly amend the law by dividing their responsibilities.

Accidents from falls of top coal and roof in the Mammoth seam, in places running horizontal, or nearly so, are more difficult to guard against; yet, in comparison to the amount of coal mined, they are not any more numerous than accidents in the other seams.

The Mammoth, when lying horizontal, or nearly so, generally averages about thirty feet in thickness, and no system of propping the roof, so far as I know, has been tried, and I have my doubts of the feasibility of any system of propping in this high seam. It requires more care, intelligence, and experience to mine with safety in this than in the other two named seams, on account of the nature and the greater thickness of the coal. When the top coal is loaded out, there is no practical way of examining the roof.

After the top coal is blasted the careful and intelligent miner takes great care to trim down any and all loose pieces, which can be done then with ease and safety. Knowing the danger himself and laborer will be in, in loading the loose coal and passing back and forth, he takes no chances, but does it right. But I am sorry that I must say, that all the miners in this seam do not use the same good judgment.

The greatest number of accidents in this seam, again, is from falls of the poorman, or the lower tiers of coal. The same reasoning holds good here as in the B seam. By the use of a little intelligence and care, accidents would be few from these falls, as the miner can always examine these

benches after each and every blast in the bottom coal; but this is too often neglected, as the sequel shows that several deaths occurred in this district during the year 1882 from falls of the benches.

Fatal accidents from falls of coal in steep pitches in the Mammoth have been numerous the past year.

There is a large percentage of the mining places in this district working on pitches from 60° to 80°, and varying in thickness from thirty to seventy feet. In these places no system of propping can be used, as when the bottom coal is mined the top often falls of its own weight, and sometimes the top coal falls in advance of the bottom coal.

These places are worked by carrying a manway each side of each breast, with the bottom strata; and the only comparatively safe place about a pitching breast, above the battery, is the manway; and it behooves all concerned, the miner and the operator, to have good manways in every breast, which is a city of refuge to the miner and a saving apparatus to the operator.

Poorly constructed manways have often been the cause of loss of life to the miner, and the loss of a breast of coal to the operator. New manways can be opened sometimes, at great extra expense, and the breast saved, but the dead miner cannot be brought to life again. The general safety of the miner in these places depends, to a great extent, on his manways, and the intelligent use he makes of them.

In most cases there is a warning given before a fall occurs, and the careful and judicious miner hastens to the manway and saves his life. As it cannot be known beforehand, on these steep pitches and free coal, how much will fall when it commences, therefore the careful miner takes no chances.

The daring miner, on the other hand, hears the warning and deceives himself by saying "it will not fall yet," "it will give more warning before it comes," and, perhaps, when he is soothing himself with these remarks, he is hurled into eternity. There are instances in these, as in all other places in the coal mines, that no human forethought could have saved the miner's life.

A certain amount of risk attends the mining of coal under the most favorable circumstances, and, in my opinion, the miner has to run the "gauntlet daily."

Accidents from mine cars inside the mines caused five deaths during the past year, and a large number of severe injuries. Most of these accidents were caused by the recklessness of the sufferers themselves, not exactly in disobeying any written law, but by the violation of the law of common sense.

Every mine or colliery has a kind of local law, which generally consists of verbal orders given by the mine-boss. The penalty attached for the violation of these verbal orders is to be "discharged from the works." We know that such penalty is hardly ever carried into effect, as the mine-boss

could not afford to live up to this sweeping penalty in many instances; and when once he allows it to be violated it is nothing but a dead letter thereafter.

Often at quitting time, when the last trip of cars is being taken out, men and boys are seen hanging at any and all places on the cars; on the sides, between, in front, and on the rear end, risking their lives for a few yards of a ride. If the mine-boss happens to come around, each and all, except the parties on rear end, jump off; but as soon as he is out of sight they are on again. I know mine-bosses, good and conscientious men, who get out of the way sooner than look on these parties risking their lives in such desperate way.

They know well that they have no real power to enforce any law for the safety of these men and boys, and they have wondered, as many others have done, why the law is not amended so as to cover the exigencies of the transportation as well as the mining of coal.

Railroad cars on surface near breakers caused the death of three men.

Out of the eight deaths caused by cars inside and outside the mines, only three should be termed "fatal accidents;" four came to their deaths by their own fatal recklessness, and one lost his life through no fault of his own, but most assuredly through the neglect of "somebody."

Explosion of gas caused the loss of one life, while several others were slightly burned at different times during the year. The injured men were all burned through their own neglect in not using proper precaution.

In every instance a naked light was used, when a little common sense teaches that the safety-lamp is the proper thing to use where gas is known to exist. I hope these lessons, although somewhat severe in a few instances, will teach the parties interested a lasting lesson.

The common saying is that the best thing with which to find gas is the "naked light," which proves itself true in every instance when a fool-hardy miner tries the experiment, and he pays the penalty by receiving severe injuries, if not the loss of his life.

These few remarks will apply with force to the one fatal accident. The fire-boss is said to be a man of large experience, and a man of ordinary intelligence, yet he carried his naked lamp a little too far this time; the consequence was a terrible explosion, which resulted in the loss of his life.

This should be a lesson to all fire-bosses in every district, as it is very evident that their own safety lies in using the safety-lamp.

They should make it a positive rule not to take, nor allow any other party whatever to take, a naked lamp from the foot of the shaft or slope that generates explosive gases, until the place is fully investigated and reported safe. The only safety to life and property is to adhere strictly to said rule.

Stripping.

Stripping is a well-known term in the anthracite coal fields, as the primeval mode of mining coal at old Summit Hill, and perhaps at other

places. The term means to take the cover from the coal, so that the coal can be mined by the light of the sun. How deep the coal should lie, so as to mine by stripping profitably, has not been determined, but at No. 1 Hollywood, a cover of 85 feet in thickness was removed, and to secure all the coal in Nos. 1 and 2 basins at this place, a cover of over 100 feet in thickness must be removed from large portions of each. This mode of mining is carried on extensively in this district, at Yorktown, Treskow, Beaver Brook, Coleraine, Beaver Meadow, No. 6, Hazleton and Hollywood, the latter stripping being the most extensive here as well as in the State.

Hollywood basins are well adapted for this mode of mining, as the three seams of coal—Wharton, Parlor, and Mammoth coming together there make a seam of large thickness—48′ 8″, of which only 4′ 7″ are slate and bone, leaving 44′ 1″ of good clean coal; which comes so near the surface at most places, except at the centers of the basins, that hardly any rock cover is found, thus making it impossible to mine but a very small percentage of this coal by the breast and pillar method. Hollywood would have been an abandoned colliery, January 1st, 1883, (with only about 700,000 tons of coal taken out of both basins,) if it was not for the pluck, energy and forethought on the part of the operator and general superintendent, Calvin Pardee, Esq., in the great undertaking of removing such great thickness of cover from the coal, an experiment never before attempted by any mining engineer, or any mine superintendent.

Already, as stated, a thickness of 85 feet of cover, comprising rock, slate and clay, has been removed from parts of No. 1. This large thickness could not have been removed with profit by the slow and expensive process of pick and shovel work, and therefore it was concluded to build a railroad to the surface from a convenient point in the basin, where a pair of engines were placed to hoist this large amount of cover high enough at once to have a good dumping ground. A chute was built from a point in the basin, and connected with an old chamber on the south side, the roof of which was blasted down, which gave ready access for the loose rock, slate, and clay, from the large blasts put in all directions to run down into the chute, where two men loaded during the last summer from one hundred to one hundred and fifty cars each day, each car containing about one hundred cubic feet.

Coal was first shipped from Hollywood in 1874, when 16,372.14 tons were sent to market, and up to January 1, 1883, 706,944 tons were taken out from both basins, of which 165,911 came from the stripping. The uncovering commenced in 1876, but up to 1880, only about 10,000 tons of the coal uncovered had been removed.

The total amount of coal uncovered to January 1, 1883, is estimated by close figuring to be about 516,000 tons, and deducting from this amount the coal taken out (165,911 tons) it leaves about 350,000 tons ready to be sent to the breaker. To uncover that amount of coal, the large sum of one hundred and twenty thousand dollars has been expended.

It is worthy of note that the mine cars at this colliery by the ordinary mode of mining, heretofore yielded $2\frac{1}{8}$ tons of coal for each car dumped into the breaker, but by the present mode of working, each car dumped during 1882 yielded only $1\frac{3}{4}$ tons, a difference showing the great amount of refuse thrown out at the breaker. By careful figuring from reliable data, the total production (from the commencement) of the parts of these two basins on the property will be over 3,000,000 tons of coal, all of which will be taken out in the coming future.

Over 2,000,000 tons of this coal would have been lost by the old method of mining for reasons stated.

The parts of these two basins on this property contain about 40 acres, and as far as I know, the same amount of coal cannot be got from the same area in any other part of the state.

A yield of 75,000 tons per acre, at a royalty of 40 cents per ton, will net the land owners nearly one and a quarter million dollars, which equals about thirty thousand dollars per acre, a much larger sum than was ever paid for any coal land in any part of the anthracite coal fields.

To uncover this large amount of coal (3,000,000 tons,) about 2.500,000 cubic yards of earth must be removed, a gigantic undertaking, but one that will ultimately pay the land owners and operators.

Mine Fires.

Black Ridge was threatened with a serious mine fire, which started in the pump-house, likely from some cotton waste or lamp-wick that was left burning on the floor when the pumpman went home.

Fortunately it was found out in time, and after a severe struggle of about ten hours it was extinguished, and the only material damage was the burning of the pump-house and a few sets of timbers at the foot of the slope.

No. 9 Colliery Fire.

This colliery is located in the Panther Creek valley, on the Mammoth seam, which is about sixty-five feet in thickness, laying at an angle of 35°. The coal was reached by a tunnel (No. 9) 2,260 feet in length, which was cut at a point about 700 feet on the pitch below the outcrop.

Some years ago another tunnel was driven, nearly parallel with this tunnel, at a vertical distance of 225 feet, which can be seen on the sketch marked tunnel No. 3. From this tunnel to the surface, the coal had been taken out and the place robbed, with the exception of a few small pillars, through which the airways of No. 9 were extended to the surface.

The principal workings in No. 9 colliery are in the inside slope, which is down 270 feet below the level of tunnel No. 9.

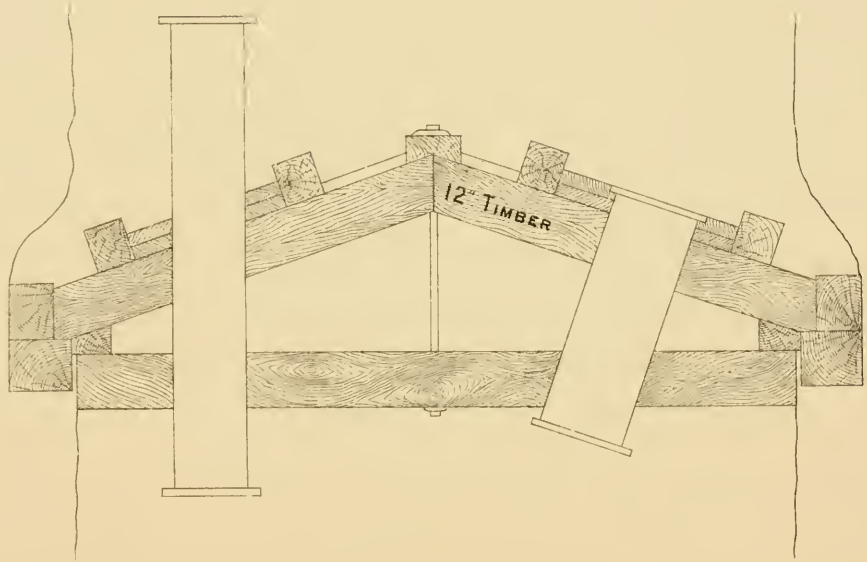
The machinery for hoisting, pumping, and ventilating purposes was located inside, near the slope, and was supplied with steam from boilers located outside near the breaker, making it necessary to run a ten-inch steam-pipe through the entire length of said tunnel. Preparatory to the

sinking of a trial slope, for the purpose of opening a second lift below the tunnel level, another steam-pipe was laid, through the outlet of the inside slope, to the engine at the trial slope. This steam-pipe, which had been in operation for some time, had necessarily heated this opening and dried the timber to such an extent that all the men working in the slope had positive instructions not to enter this opening with naked lamps, and a lantern was always kept burning for the use of any whose duties required them to go in.

About three, P. M., on the 29th of July, 1881, at a time when the colliery was in full operation, the inside foreman was notified that smoke was passing up the slope. The foreman at once surmised the origin of the smoke, from the fact that only a few minutes previous he had seen one of the workmen coming out of the outlet with a naked lamp, and immediately hastened to the place, only to find his fears realized, and the flames spreading rapidly, fanned by a strong current of air. The fan was stopped at once, and all available means were used to prevent the fire from spreading, but so strong was the current that passed through the outlet, that in the short interval of one hour (between three and four, P. M.) the timbers were all consumed in the opening, and the fire fiercely burning the coal, and rapidly destroying the adjoining openings.

In this crisis it was evident that something on a larger scale had to be done to stop this strong current of air, which was increasing with the increase of the fire. Accordingly, a large force of men from the adjoining collieries were hastened inside, through the tunnel entrance, to construct brattices at every available point. When the brattices were all completed, an attempt was made to close the outlet, (the slope in the mean time had been closed,) which proved to be a very difficult matter, on account of the large size of the hole and the intense heat. After several failures it was at last closed; then the steam from the thirty boilers on the outside was let in; also a large body of water from old slope No. 2 was turned in so as to fill the openings below and stop all the air that was passing as soon as possible.

In the meantime the fire had ignited the timbers above the level of the tunnel, which, in turn, had ignited the coal above. The men fighting this part of the fire were under great disadvantage, as the sulphur from the burning coal below made it impossible to make any progress. Therefore, it was decided to seal the mine, that is as far as practicable, which proved a very difficult matter on account of the numerous crop holes above old No. 3, but by the 2d of August all the holes were closed, and wherever the presence of steam or sulphur was found, it was at once covered with a thickness of clay, which so confined the steam, that, comparatively speaking, only very little escaped. The steam was sent in for two months without any intermission, but the indication on the surface led to the belief that the brattice on the east side had burned down, and that the fire was spreading in that direction.



Horizontal View of Timber Dam.
No. 9 Tunnel, Lehigh Coal & Navigation Co.

In order to prove the accuracy of this, a place on the surface was selected, from which a six-inch hole was put down so as to strike east of where the brattice was supposed to have been destroyed.

A small exhaust fan was connected with this hole, and driven at great speed, but failed to develop the presence of sulphur, satisfying the officials that the brattice was safe.

On the 1st of September, as the presence of sulphur had disappeared, and not wishing to subject the mine to the action of steam any longer than was necessary, it was determined to sink another hole east of the old tunnel, with the purpose of ascertaining the condition at that point. This hole, when acted on by the fan, developed the presence of sulphur, which disappeared about the latter part of said month. The condition of things was favorable, and it was decided to open the mine. This was done at a great expense, because the action of the steam on the timber, rock, and coal had closed the openings.

About three months were spent at this work of re-opening and re-timbering, when the presence of fire was again discovered. The mine was again closed as securely as possible, the steam let in through the tunnel and from six additional boilers placed near the outcrop. The steam from the six boilers was conveyed through the two holes that were put down to test the presence of fire.

On the 1st day of March, 1882, the tunnel was again re-opened, there being every indication that the fire wss extinguished; but it had been open only a short time when the fire was found as strong as ever.

It was then determined to build two dams of timber, one in No. 9 tunnel, and the other in the east gangway of No. 2 tunnel, which was thought would cause the water to raise in the workings about one hundred feet vertically.

This was, however, by no means certain, as it was feared that the rocks were so badly broken that the water would either run away entirely, or take so long a time to fill up that the fire would extend beyond its reach; but as this appeared to be the only way left untried, the dams were built as per sketch. The steam from the boilers near outcrop and all the available water was sent in.

This was continued for three months. Fortunately the rocks held the water, causing it to raise about one hundred feet vertically, which was about as far as it could rise. In due time the colliery was opened at No. 3 tunnel; the heat was found so great that fears were entertained by many that the fire was still burning. The following weeks were times of great anxiety to General Superintendent W. D. Zelmer, who had directed all the movements in this fight against a very unequal foe, and the worst enemy that colliery managers have to combat with; and the doubt of the existence of fire must have lurked in his mind until the opening was made between Nos. 9 and 3 tunnels.

The water was let out, and an opening made through the dam at No. 9

tunnel, and a large force of men was set to work there and at the different openings in No. 3 tunnel, but they were unable to make much progress on account of the intense heat, especially in No. 3, the thermometer showing 140° Fahrenheit at the time and for several weeks after, when it commenced to descend gradually until it reached 120°, and stood at that mark until the small opening between Nos. 9 and 3 was completed, which opening was put through by the most extreme effort on the part of the men, who could only work one at a time, changing about every ten minutes. A fan was placed near the end of tunnel to supply air to these men, but in spite of this current of air the thermometer registered 120°.

When this hole was finished it was evident that the fire had been extinguished. Since then the work of re-opening the colliery has been pushed forward with great rapidity, and the progress made each day showed how extensive the fire had been.

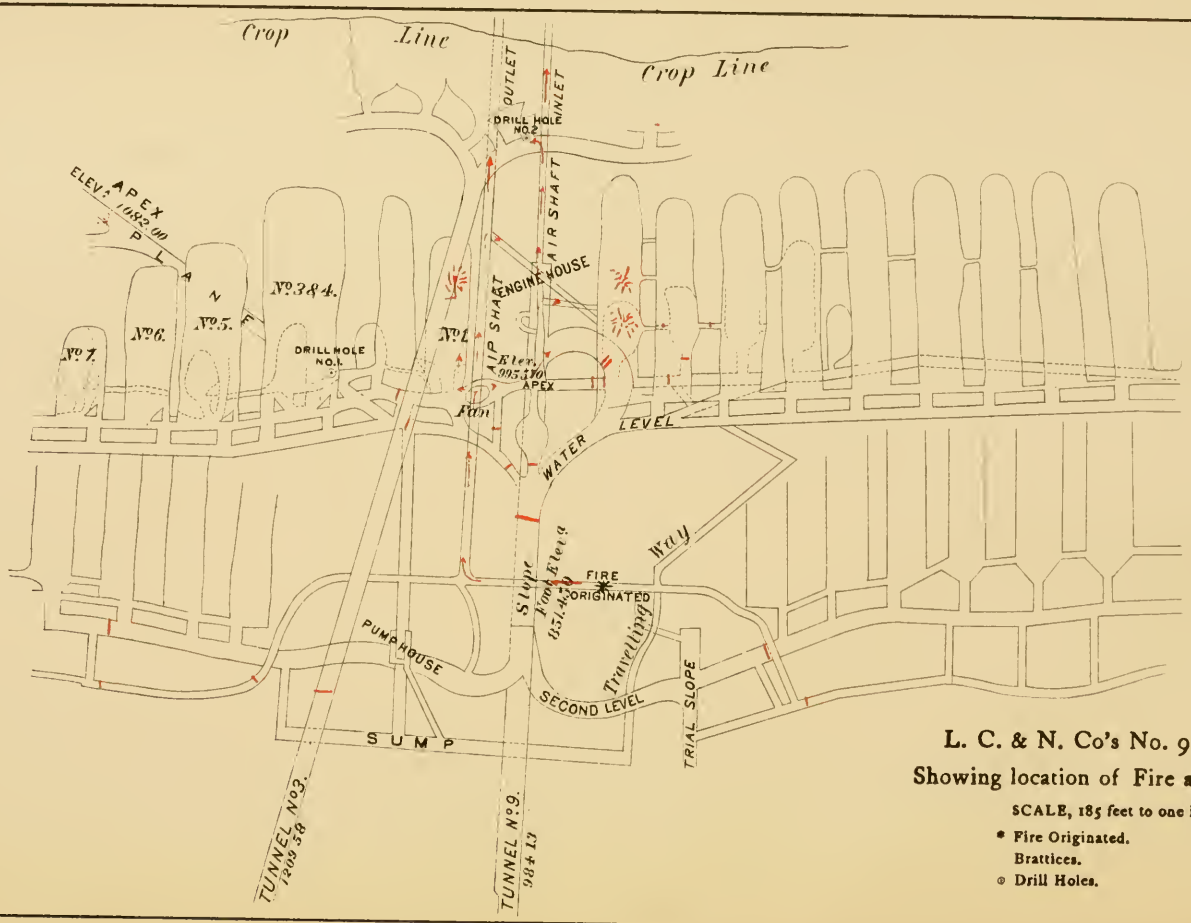
At this writing the gangways and branches have been all re-opened and retimbered as far as the slope and outlet, and as far east as the airway where the fan was placed. The openings below where the fire originated are full of water, and the damage to the workings is at present unknown, but it is supposed not to be very extensive, as the water that ran in filled the openings, cutting off the supply of air in a short time. The water from this slope will be pumped out as soon as practicable. In the meantime the officials are confident of starting a portion of this colliery on the water-level gangways during the summer of 1883.

This instance again proves conclusively, to my mind, that the only certain remedy for extensive mine fires is water; and if the pillar between Nos. 4 and 9 had been removed, allowing the water to pass that way, this fire could not have been put out but by an enormous expenditure of money, which would, perhaps, reach a sum more than the value of the coal.

Boundary Pillars, and the Importance of Leveling in Coal Mines.

In my report of last year I called the attention of the Senators and Representatives from the anthracite coal regions to the importance of some legislation concerning boundary pillars and leveling in coal mines. I deem it my duty to speak to them once more, as I feel that the want of proper laws relating to these subjects will be productive of evil consequences in the future.

The almost forgotten disaster at Avondale, in this county, and the recent catastrophe near Braidwood, Illinois, appeal strongly to the members of the Legislature to enact a statute bearing upon these subjects. In my report of the year 1881 may be found my reasons for recommending legislation on these important matters, and I earnestly hope that some attention will be given them before another terrible mine disaster warns the Legislature of a neglect of duty.



L. C. & N. Co's No. 9 Colliery.

Showing location of Fire and Brattices.

SCALE, 185 feet to one inch.

* Fire Originated.

Brattices.

⊙ Drill Holes.

NUMBER AND SIZE OF NEW FANS ERECTED IN THE SOUTH DISTRICT OF LUZERNE AND CARBON COUNTIES DURING THE YEAR 1882.

Number.	Collieries.	Operators.	Proportions of Fans.				Revolutions.	Cubic feet of air exhausted per minute.	Water gauge.	Dimensions of Engines.	
			Diameter.	Width.	Openings.	Diameter of openings.				Length.	Diameter.
1	Sandy Run,	M. S. Kemmerer & Co.,	15′	4′ 6″	1	7′ 6″	55	37,500	.7	24″	12″
2	Eckley,	J Leisenring & Co.,	15′	4′ 6″	1	7′ 6″	60	35,200	.8	20″	10″
3	Oak Dale, No. 1,	G B. Markle & Co.,	16′	4 6″	1	8	60	37,240	.9	18″	14″
4	Black Ridge,	Black Ridge Coal Company,	16′	5′	1	8′	69	59,280	.85	18″	14″
5	Hazleton, No. 3,	A. Pardee & Co.,	20′	. . .	1	9′ 9″	50	49,700	.7	24″	16″
6	Laurel Hill,	A. Pardee & Co.,	*6′	. .	2	4′ 4″	300	27,500	1	10″	7″
7	Stockton West, No. 1,	Linderman, Skeer & Co.,	16′	4′ 6″	1	7′ 6″	55	36,500	.65	20″	10″
8	Coleraine,	W. T. Carter & Co.,	15′	4′ 6″	1	7′ 6″	50	30,000	. .	20″	10″
9	Jeansville,	I. C. Hayden & Co.,	16′		. .	8′	60	43,500	.55	18″	12″
10	Mount Pleasant,	Calvin Pardee & Co.,	16′	4′ 6″	1	8′	65	45,180	.7	20″	12″
11	Tresckow,	E. B. Leisenring,	15′	4′ 6″	1	7′ 6″	54	36,200	.5	18″	10″

* Champion ventilator.

IMPROVEMENTS MADE AT THE VARIOUS COLLIERIES DURING THE YEAR 1882.

A. Pardee & Co.

HAZLETON MINE.—A large Thatcher pump, 36″x15″x72″, has been put in place, with a capacity of about 1,300 gallons per minute. This pump, with similar one now being put in place, will throw the water to the surface, a distance of about 2,000 feet, at an average pitch of about 20°.

A No. 6 Cameron pump, size 14″x9″x31″, with a capacity of about 250 gallons per minute, has been put in the inside slope; also fourteen cylindrical boilers have been erected (being 4, 4, and 6); size respectively is 33″x30′, 33″x22½′, and 33″x35′; to supply additional steam to hoisting engines on surface, hoisting engines inside, and the pumps in the inside slope.

An Allison & Bannan steam pump, size 20″x11″x36″, with a capacity of about 500 gallons per minute, has been put in place to throw water on breaker.

LAUREL HILL.—An addition has been built to the eastern end of this breaker, to enlarge the picking room. This breaker is fitted to prepare a large quantity of coal this coming year.

A No. 4 Murphy champion ventilator has been put inside the mines to ventilate the lower workings. This fan, though working under very unfavorable circumstances, drawing its supply of pure air through a circuitous route a distance of about 5,000 feet, discharges into the workings below about 25,000 cubic feet of air per minute. Since this fan has been put in place, the chambers are worked in sections of two, three, or more, as desired, and are all well ventilated.

No. 7 slope, a feeder to Laurel Hill, has been sunk to the basin at this point, and gangways started east and west. A second opening was driven to the south-east gangway of the Hazleton mine. This opening, and the one driven with the slope, are of ample dimensions to secure good ventilation when the fan is put up. This slope will open a large area of coal, giving a lift of about one hundred yards on the south and about eighty yards on the north dip. The gangways east, on both dips, have a distance of about 6,000 feet to go.

On the surface, at this place, a pair of engines, 34″x18″, eight 33″x30′ cylindrical boilers, with engine and boiler houses, have been substantially erected.

No. 6.—A plane is being finished from the stripping on the surface to lower gangway, ending near foot of slope, to lower the coal from said stripping, so it can be hoisted to the breaker with only one handling.

The area of coal stripped, which is to be let down over this plane, is about fifteen acres, with an average thickness of about fifteen feet, equal to about 250,000 tons.

CRANBERRY.—A new mine locomotive, of about forty horse-power, has been introduced to supersede mule power, which for long haulage, as in

this case (nearly one and one half miles), is a decided improvement, and will prove a great saving for the company. This one and one half miles of road has been relaid with new sills and 35-pound rails.

No. 3.—A 20-feet fan, with horizontal engine, has been substantially erected to ventilate this colliery, and also a part of the lower workings of Hazleton mine, which exhausts about 50,000 cubic feet of air per minute. This is one of the best fans in this region, and under fair circumstances would give much better results. More than one half of its air comes from a distance of nearly two miles, through a very irregular route.

A tunnel was driven into the B seam, which seam was found in fault, the extent of which has not been yet determined.

Sugar Loaf.—Four 33″x3 ′ cylindrical boilers and an addition to the boiler house have been erected. A tunnel was driven from the fifth lift to the Wharton, finding it nine feet in thickness, of which seven feet two inches is good coal.

South Sugar Loaf.—A long stroke Thatcher pump, the diameter of whose steam and water cylinders, respectively, is 36″x15″, and length of stroke, 72″, has been put in place to throw water to the surface; its capacity is about 1,300 gallons per minute.

Council Ridge—J. Leisenring & Co.

Two subterranean slopes were sunk, their respective lengths being 140 and 80 yards, and the pitch 4 and 12°. The coal was found of good quality in each, with an average thickness of about fourteen feet. Two hoisting engines were erected at the said slopes; size, respectively, 18″x24″ and 16″x30″. Six cylindrical boilers, 32″x27½′, with a new boiler-house were erected. Two ventilating fans were put in place, their respective diameters being 16′ and 6′, which made great improvement in the ventilation, but yet there is plenty of room for further improvement.

Sandy Run—M. S. Kemmerer & Co.

Slope No. 4 was sunk one hundred yards when it reached the basin, and gangways east and west started in good coal. This slope is on the north dip of No. 2 basin, and sunk from the west counter gangway of slope No. 2. The seam, which is the B, varies from ten to twenty feet in thickness.

Slope No. 5, which was started from the main east plane gangway, was sunk fifty-five yards to the basin, all in good coal, on an average pitch of 25°. Both dips are being worked, and the coal hoisted by a pair of engines located on the surface.

On the surface, in line with No. 4 slope, a permanent boiler-house is erected, with seven 30″x36′ cylindrical boilers, to supply steam for hoisting-engines and pumps. A sixteen-feet diameter fan was erected, which, in addition to the other fan, ventilates all the inside workings successfully.

On the surface, in line with No. 5 slope, hoisting machinery was erected, and a boiler-house with four large cylindrical boilers, size, 36″x36,′ to supply it with the necessary steam.

Upper Lehigh—Upper Lehigh Coal Co.

Slope No. 5. An opening is being driven to the surface on the south side of the basin, where a fan of sufficient capacity is to be placed. The railroad from the slope to No. 2 breaker is completed. It is well built and laid with 50-pound steel rails; a locomotive of thirty-five horse-power is already on the track and doing good service.

A new boiler house, with four additional large cylindrical boilers, 34″x36′ has been erected. A new pump 25″x14″x72″, with 12″ column pipe has been put in place.

Slope No. 6, which was commenced late in 1881, has been sunk to the basin, a distance of three hundred and twenty-nine feet, on an average pitch of 20°. The coal is of a good quality, with an average thickness of about twelve feet. A second opening is being driven to the surface at a point one hundred and fifty feet east of the slope, where a suitable fan will be put in for ventilation. A hoisting engine of eighty horse-power, with friction drum, four large cylindrical boilers 36″x36′, with engine and boiler houses have been substantially erected. The coal from this, as well as No. 5 slope, will be taken to No. 2 breaker. For this purpose about a mile of railroad was built, and laid with forty-pound steel rails. Two artesian wells have been sunk to respective depths of three hundred and fifty and four hundred and fifty feet, both of which are operated by a bucket or lifting pump, six and one quarter inches diameter by five-feet stroke, and driven by a 12″ engine, both combined having a capacity of about one hundred and eighty thousand gallons per twenty-four hours, which is sufficient to supply the collieries, and for all domestic purposes.

Cross Creek Collieries—Coxe Bros. & Co.

Slope No. 1. A tunnel has been started in the No. 5 inside slope from south dip of the Buck mountain, which cut the Gamma seam with three and one half feet of coal at a distance of one hundred and five feet. The tunnel was extended one hundred and five feet further, and another seam was cut, supposed to be the Wharton, which was only two feet thick and the coal of inferior quality. The tunnel has about one hundred yards to go to reach the Mammoth, which will probably be struck in the basin.

Slope No. 2. Gangways in second and third lifts were continued during the past year, developing excellent qualities of coal, but no breasts or chambers have been started yet.

An outside railroad for mine cars has been built between No. 1 and No 2 collieries, facilitating the hauling of supplies, and enabling to prepare the different kinds of coal at either breaker, which will be necessary so as to keep the Buck mountain coal separate from the Mammoth and Wharton coal.

Slope No. 3. An underground slope three hundred and sixty feet in length has been sunk to the basin on a pitch of about 10°. The hoisting is being done by the main hoisting engine on the surface, the rope being carried on pulleys a distance of nearly twelve hundred feet.

Beaver Meadow.—These collieries, after many years of idleness, are expected to be in shape to commence shipping coal again during the summer of 1883. To accomplish this, water is being pumped out of the several old slopes and the surface taken off a portion of the Mammoth seam, and in this way a large portion of the coal that was considered lost will be mined.

The Lehigh Valley Railroad branch, connecting the breaker with the Beaver Meadow division, has been taken up, as it was running over considerable coal which can be shipped, and a new connection of about one and a half miles in length has been constructed.

Middle Cross Creek.—A slope was sunk four hundred and eighty feet on about 12° pitch in the south basin, reaching the basin, but finding the south dip in confusion.

A diamond drill hole is being sunk there now to ascertain if another seam of coal underlies the slope seam, so as to locate the hoisting machinery permanently.

West of the breaker another slope was sunk on a regular pitch of 30° through the slate and rock, cutting and connecting the three coal seams. The bottom seam was cut at three hundred and ten feet in the basin. This slope is intended for a second opening to the shaft, a traveling way for the men, and a way to take all supplies into the shaft.

The shaft started in 1881 was completed, cutting B seam at a depth of one hundred and forty-nine feet, on an angle of 20°.

About three quarters of a mile east of the shaft another slope was sunk in the north basin, a distance of one hundred and sixty-three feet, which was sunk in the top seam, showing this seam to be fourteen feet in thickness, and the coal good. Gangways have been started east and west, and also a tunnel running north, to cut second and third seams that were proved by a diamond drill hole sunk on the top of this slope. This level was chosen to turn gangways and start the tunnel, with a view of drainage into the Black creek.

The ground rising rapidly east will give good lifts after a short run of gangways. The Black creek has been turned into a channel which was dug for about one and one fourth miles along the south side of the valley, at what was considered a safe distance from the improvements. Seven thousand eight hundred feet of tracks have been graded above and below the breaker, which has been all ironed with fifty-pound steel rails. This colliery is expected to ship coal in the summer of 1883.

Lower Cross Creek.—The breaker is located on a saddle; gangways are driven on what is considered the bottom seam, north and south of this saddle. A tunnel was started opposite the main breaker slope, on water level, which is expected to cut the north dip of the B seam in the north basin at about three hundred and fifty yards. It has cut four seams, two of which are respectively nine and fourteen feet thick, and the coal very good. The pitch is regular, 55° to 60°. A slope is being sunk on the nine-foot seam, which is at present about two hundred feet deep, the pitch being regular for the whole distance.

At two hundred and forty feet a tunnel will be started to cut the upper seam. Fifty-two hundred feet of track have been graded and laid with fifty-pound steel rails. This colliery will begin to ship coal in the spring of 1883.

WEST CROSS CREEK.—Slope No. 3, mentioned in the inspector's report of 1881, has been sunk one hundred and fifty yards, and gangways started east and west on the main water level opened by the creek tunnel.

A tunnel is started opposite Slope No. 1, to reach the north dip of the B seam. It has been driven through both members of the Gamma and across the basin, and is expected to reach the B at about ninety yards.

Mount Pleasant—Pardee Sons & Co.

Slope No. 5 was sunk one lift of one hundred and seventy-one yards below the No. 2 slope workings, making the total length of the slope four hundred and seven yards, on an average pitch of 14°.

Slope No. 4, which was an inside slope, was driven to the surface through the top rock from the landing, which is nearly parallel with the bottom of No. 2 slope. The distance driven through was one hundred and five yards, making the total length of slope one hundred and seventy-four yards, on an average angle of 39°. In driving this slope to the surface the parlor seam was cut, and found to be four feet eight inches thick, three feet eight inches being good coal. The double engines inside have been removed to the surface, and are in use at this slope. A sixteen-feet diameter fan has been erected at No. 2 slope, to ventilate this and the No. 5 slope. This fan gives good result, and has improved the ventilation wonderfully. A new Allison steam-pump, size 34″x14″x72″, has been placed in No. 2 slope. This colliery is in good shape to make a large increase in shipments during 1883.

Treskow—E. B. Leisenring & Co.

SLOPE No. 7.—A new 16-feet diameter fan, with vertical engine, has been erected, to ventilate the Mammoth and Wharton seams, which it does successfully, giving satisfaction to operator and men.

Jeddo Collieries—G. B. Markle & Co.

OAKDALE No. 1.—In this inside slope a self-acting plane has been constructed up the north pitch of the Mammoth seam. The length of the plane is one hundred and twenty yards, on an average pitch of 15°.

A sixteen-feet diameter fan was placed on the surface at No. 3 boiler-house. With this fan and the other fan at Oakdale No. 2, both slopes are well ventilated, and both slopes are in good shape, as far as ventilation is concerned, having good-sized airways and cross-cuts, and considerable attention is paid by the general inside foreman that these things are kept to the proper size. An artesian pump has been placed in the bore-hole situated west of Oakdale No. 3. This pump discharges about seventy-two gallons per minute. About thirteen hundred feet of four-inch wooden pipe was laid from bore-hole to new tank—size, 30′x8′x8½′. At No. 3 a

new locomotive, about 30 horse-power, was introduced to No. 2, Oakdale, to supersede mule-power, which is an improvement in many respects.

Highland No. 1.—An addition was built the breaker. A new Markle pump was placed in the middle lift, diameter of steam cylinder 20″, length of stroke 36″. It has eight working-barrels, each 6″ in diameter, with a capacity of 1,000 gallons per minute. A new Cameron pump was placed in the inside slope, with a capacity of about 500 gallons per minute. A boiler-house was built, and three cylindrical boilers 33″x22″x4″ were added to the previous number. Forty-nine hundred feet of three-inch diameter pipe was laid from reservoir to Highland No. 1 tank.

Highland No. 2.—A bore-hole three hundred and twenty five feet deep was put down south-east of breaker, but so far no great supply of water was found. It is intended to extend it until a good supply of water is found.

All the tenement houses at the different collieries have been renovated, which adds greatly to the general appearance of these mining villages.

Stockton—Linderman, Speer & Co.

West No. 1 slope has been sunk on a uniform grade of 50°. It is laid with 35-pound steel rails, and is capable of producing one thousand tons of coal daily. A 12″ Thatcher pump, with 12″ column pipe and 3″ steam pipe is put in place. The outside improvements at this colliery comprise a new breaker, with all the modern facilities to clean coal, boilers and boiler-house, engine and engine-house, with a new 16-feet diameter fan, making it one of the most complete new collieries in this district.

No. 2 slope, first lift gangway going east, has been continued to the old No. 3 workings, and according to Superintendent Airey's estimate fully thirty per cent. of the original contents of the seam is being reworked which, when added to that formerly mined, shows about seventy-five per cent. realized product.

These figures have special interest in view of the importance of this most splendid seam of coal, and the length of years added to the life of the colliery.

Old No. 3 slope is also being re-opened, and is being put in good working condition. Also, a slope is being driven from the lower gangway to surface at east No. 3, which, when completed, will place it in good condition to produce large quantities of coal for years.

Old No. 1 has been re-opened, and twelve cylindrical boilers 33″x36′, and a new boiler-house have been erected, also two Thatcher pumps 30″x 15″x42″ with 16″ column pipes, and 6″ steam pipes have been put in place. These pumps have been greatly improved, and the openings enlarged so as to admit of wooden lining. The working barrels, chambers, tail and column pipes are well lined, making them complete and lasting in all their parts.

Slopes Nos. 2, 3, 4, and 5, have been relaid with new 35-pound steel rails.

Black Ridge—Black Ridge Coal Co.

A new 16-feet diameter fan has been put in place, which, with the nec-

essary improvements inside, such as large air-ways, large cross-cuts, doors, and check-doors, makes this one of the best ventilated collieries in this district.

Four cylindrical boilers 30″x30′, with a new boiler-house, have been erected. A traveling way for men and mules has been driven to the surface on the south side of the basin, which does away with the hoisting of men up the slope.

Jeansville—J. C. Haydon & Co.

A new 16-feet diameter fan, which was built at the home shops, was substantially erected near the mouth of No. 7 slope, which ventilates Nos. 1 and 4, which, with the enlarged air-ways, makes a decided improvement in the ventilation of these collieries, and places them in the front rank in that respect.

A new breaker, with all the modern improvements, was built during the year 1882, to replace the breaker that was burned January 17, of the same year, and a pair of powerful engines were placed near No. 1 slope to hoist the coal for this breaker. It is expected that this new breaker will be put in operation in the spring of 1883.

Hollywood—C. Pardee & Co.

The improvements at this colliery consist of a pair of hoisting engines, with an upright fifty horse-power flue boiler to supply it with steam. This engine is used to hoist the dirt at No. 1 stripping.

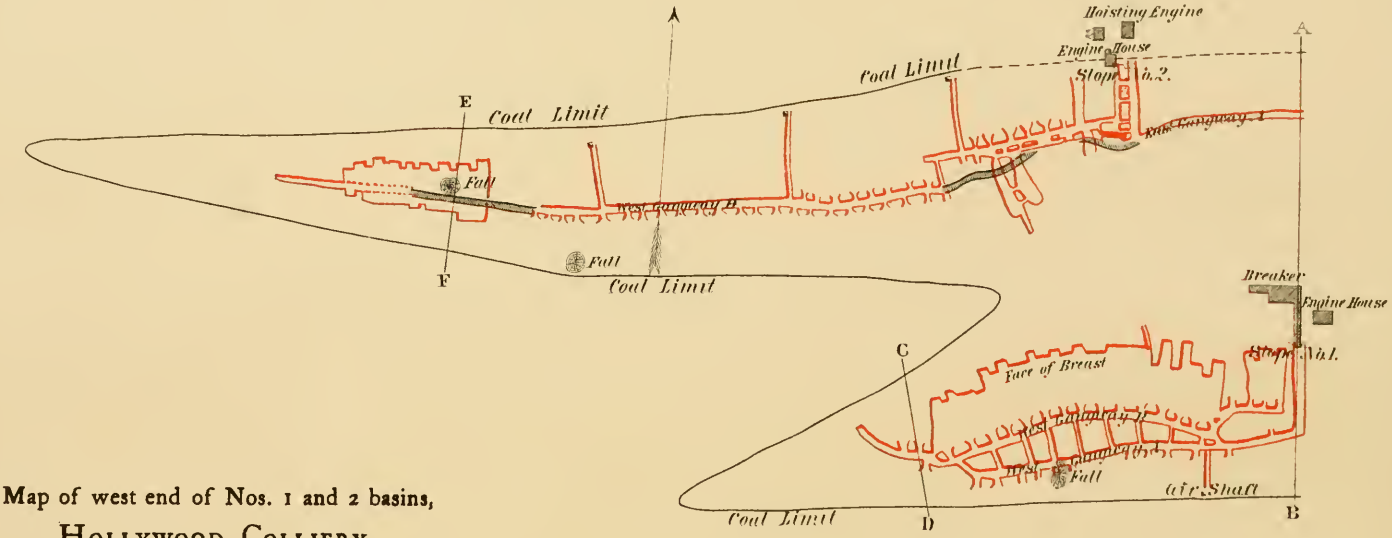
Coleraine—W. T. Carter & Co.

A subterranean slope was sunk to the basin from a point about four hundred feet west of No. 2 inside slope. The coal was found good and about nine feet in thickness. The angle of this slope is about 20°. To sink this, temporary engines were used, which will be replaced by larger ones at an early date. About two hundred feet east of this slope a second opening was driven to the surface, on the top of which a new fifteen-feet diameter fan was placed—an improvement much needed.

Fatal Accidents from Falls of Coal, Sides, and Roof.

No. 1.—John Points, miner, aged forty years, was fatally injured in the Mammoth seam, at Cranberry, and died the following day. The coal at this place lies nearly horizontal, very free, and full of slips, and soft seams running especially through the benches. The place was worked by two miners, a man named Dennis Boyle and deceased. It was driven about twenty-four feet wide, and was an apparently easy and safe place to work in, if the proper precaution was taken of barring down the benches after each and every shot in the bottom coal, which was not strong enough to bear their own weight when the coal was taken out.

The miners had a short time previously blasted a hole in the bottom and stayed out a reasonable time, as they thought, to allow any loose coal that might be hanging to fall. Finally they went back, and instead of examining the benches, as they should have done, commenced to bar out the



Map of west end of Nos. 1 and 2 basins,

HOLLYWOOD COLLIERY.

Operated by

CALVIN PARDEE & Co.

Scale, 225 feet to an inch.

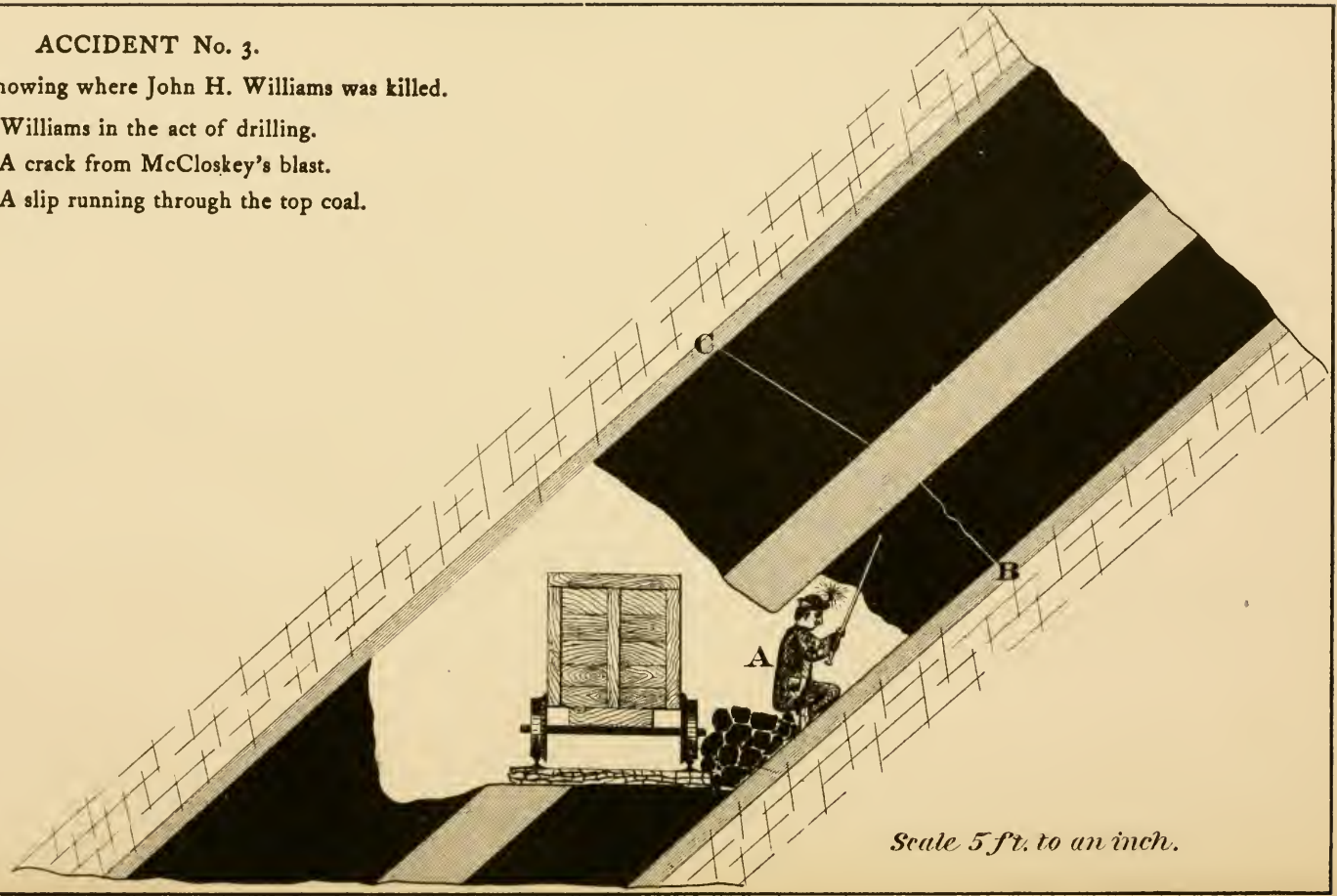
ACCIDENT No. 3.

Sketch showing where John H. Williams was killed.

A. Williams in the act of drilling.

B. A crack from McCloskey's blast.

C. A slip running through the top coal.



Scale 5 ft. to an inch.

loose coal, and while doing this the benches fell across the face of the breast, covering both men, fatally injuring Points and severely injuring Boyle. Had they examined the benches, they could have detected a slip or seam running through even, or nearly so, with the face of the bottom coal, and acting as careful men would, and undoubtedly as they should, they would have taken down this loose coal before doing anything with the bottom coal. The mine boss was in this place the evening of the day previous to the accident, and called special attention to the rottenness of the benches, and ordered the men to see that it was taken down after every shot in the bottom.

I attribute this first fatal accident in this district this year to the men's own carelessness in not taking the proper precaution for their own safety.

No. 2.—John H. Williams, miner, aged thirty-eight years, was instantly killed by a fall of coal in Wharton seam, at Spring Mountain No. 4, February 4.

Deceased, with four others, was engaged in widening a piece of the main gangway for a passing branch. When they started on this work two men were employed at each end, and when the accident occurred they had come together within about fifteen feet, each party still working on either side. The other miner, named McCloskey, had fired a shot, which must have shaken the whole thing, as the subsequent accident proves. Williams, the deceased, understood this and started to put a plug (or a short hole) in a small block of bottom coal that he thought held the top. While he was doing this McCloskey kept on barring the loose coal after his shot, and suddenly the whole thing fell, killing Williams instantly, and seriously injuring a driver boy who sat on the bumper of a car that was being loaded, fracturing both his legs, one of which had to be amputated to save his life.

This is one of the worst accidents in this district during the year, proving the old adage that "familiarity breeds contempt."

The men in charge had been mining coal for many years, and were considered fair miners. Both knew the danger they were in when one was barring the coal and the other drilling at the same time, and had one of them stopped, it is likely that the accident might not have happened.

Deceased should have known, and did know, that he was risking his life; yet he kept drilling away without asking the other man to stop, and the other man kept barring away, knowing also that every blow that he gave was weakening the coal, and if he was safe himself, he could have seen that the other man's life was in danger, and it was his duty to stop or ask the deceased to move out of the way until he was through.

This accident I attribute to the recklessness of the two miners. One lost his life by it, and it should be a life-long lesson to the survivor and others that are placed in similar circumstances.

No. 6.—John Randah, laborer, aged forty years, received a compound fracture of his leg below the knee by a fall of coal in a breast in B seam, at Upper Lehigh No. 2, February 22. He died March 3, at the Wilkes-Barre hospital, from secondary hemorrhage. It was found necessary to have his

leg amputated, from which he never rallied, hemorrhage setting in, which was at this crisis necessarily fatal. The deceased left a widow and two children at home in Hungary to mourn his loss. If I were consulted in this and other matters, I would protest against moving injured men to distant hospitals, which, I think, has been the means of hastening the death of several during the year in this district, It is, proverbially, a trait in this nationality not to have anything whatever to do with their injured and dead friends. The companies, in every instance, have had to stand the expense of these Hungarian funerals.

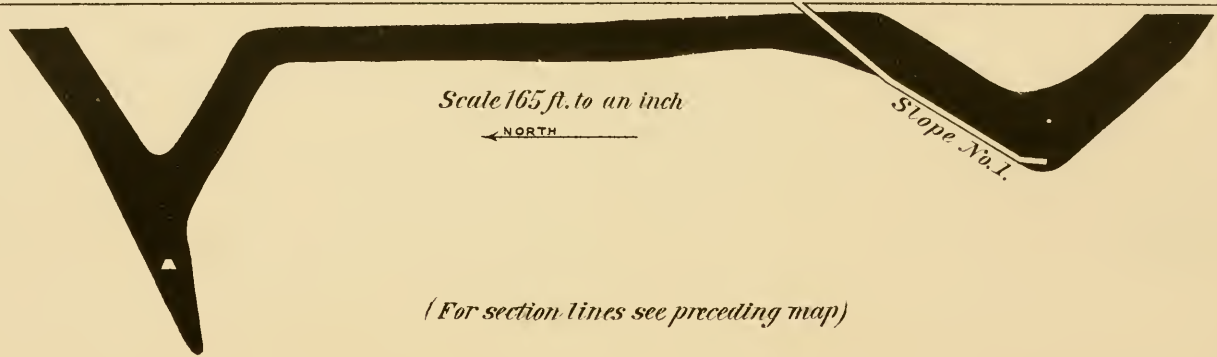
No. 7.—Patrick Brislin, a miner, aged 22 years, was instantly killed by a fall of coal in the Mammoth seam, at Ebervale No. 6, March 6. Deceased moved to this place about a week before, from Lansford, and had only worked a few days in the breast before he was killed. This place was opened and driven about twenty yards from gangway in the bottom coal, the car following them to the face. At this point they struck the pitch, and worked up about six yards further, when the miners named Boner and Boyle thought that the benches were getting heavy, and spoke to the inside foreman about them, who told them to take no risk, but to take the benches down at once. The two lowest tiers were taken down, and the top tier left as it made good roof, and was generally considered to make the best roof in the mine. After this they worked about four weeks in the bottom coal, when one day a piece of coal rolled on Boyle's foot, which kept him in the house for over a week. In the meantime he sent word to Boner that he didn't intend to go back to work with him again, and during this time deceased came to look for work and was taken in with Boner. They had worked together only a couple of days when Boner was taken sick, which left deceased to work alone, and on the first day that he was alone, while loading a car the top tier, which was considered good or safe *five weeks* before, fell right across the breast as stated, killing Brislin instantly, and smashing the car platform and road. Boyle testified that before he left the place he told Boner that he was afraid the top was bad, and that Boner assured him that *he* didn't think so. So the matter was dropped; but Boyle said that he had some misgivings about it still. When asked why the place was not examined he made the lame excuse that they had no ladder, and that there was no timber to make one around the place.

Taking all for granted this was not enough excuse, to call for men to risk their lives. After I went out I made inquiries of the superintendent, who convinced me that there was any amount of narrow planks and long scantlings on the place, and that the men had always taken them for ladders and no complaint whatever was made.

It is not known whether deceased knew of the doubts about the top coal being bad, as the mine-boss was with him in the breast the afternoon before the accident occurred, and he said not a word about anything being wrong.

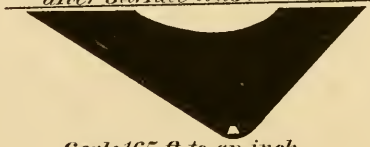
The foreman could not examine the top, and never had any doubt of it, as nobody had said a word to him respecting it.

Section through line A-B as developed by mine workings and bore holes by Calvin Pardee Esp.



(For section lines see preceding map)

Section through line C-D as taken by actual measurements after surface was removed.



Section through line E-F as taken by actual measurements after surface was removed

No. 12.—Thomas Eckles, miner, aged 40 years, was fatally injured by a fall of the poorman in Mammoth seam, Oak Dale No. 1, May 20, and died while being taken out. Deceased and a man named Phillips, by the appearance of the place two careful and intelligent miners, were working together. At the time of the accident Phillips was drilling a hole in the bottom coal, and deceased was preparing to start another, but before doing so took his drill and sounded the coal above, and had scarcely pronounced it safe when a large piece about ten feet long, three feet wide, and two feet thick fell on him. Such accidents are generally called unavoidable, and in a great measure they are so. This man was probably a good judge of the safety of the coal, which was only a couple of feet above his head, yet his judgment failed. The coal fell when he thought it safe. In looking into the cause of this accident I found nothing wrong. The place looked very safe, and the coal very strong.

No. 13.—Anthony Gockin, miner, aged forty-six years, was instantly killed by a fall of top coal in B seam, Council Ridge No. 5, May 22.

The breast that this man was killed in was one of those places which is usually considered safe, the coal being very strong, which made it necessary to bring it all down with powder. The seam here is about fourteen feet high, having a pitch of about 10°. The bottom was being blasted to take cars to the face—this plan is sometimes bringing the loader under the edge of the top coal. A few days previous to the accident deceased had been blasting the top coal down, and in the hurry to commence loading, he omitted to do what every good and careful miner does, that is, to bar down all the loose coal when he could reach it. On the morning of the accident he was helping the laborer to load, when suddenly a piece of about two hundred weight fell, and struck him on his head, killing him instantly. I consider that he came to his death through his own neglect, or ignorance, or perhaps both. By the appearance of this man's place, he knew very little of mining coal, and I think somebody is responsible for allowing him to mine when he knew nothing of the danger he was in.

No. 15.—Patrick Judd, miner, aged sixty-five years, was fatally injured by a fall of clod in Wharton seam, at Humboldt, June 15th, and died in three days. Deceased, with a few more men, was eating his dinner, about seventy-five feet from the face of his breast by the side of the road. Deceased was sitting between two props, which were about seven feet apart, when suddenly a piece of clod fell, severely injuring him, which injury proved fatal, as stated. The breast was well timbered all through, there being a row of props each side of the road, with an average distance of seven feet apart. The immediate cause of this fall was a small slip going through the clod close to one of the props. It is likely that the deceased had not noticed it. I would say that there is no saving of props in the mine, and care is taken that they are put in right, yet accidents and deaths have been frequent in it this year, owing, probably, to the very bad top overlaying the Wharton, which is the only seam mined.

No. 18. John Boyle, miner, aged fifty years, was injured by a fall of

coal in Mammoth seam, at Yorktown No. 6, June 29. His injuries were considered very slight at the time, as he walked home with the aid of an assistant. On the 2d day of July he was taken suddenly worse, and died on the 3d from internal injuries, as the doctor said.

No. 20.—Anthony Yunkleman, laborer, aged twenty-seven years, was instantly killed by a fall of a thin layer of slate and bone, in Mammoth seam, at East Sugar Loaf, July 8. Deceased was a Hungarian that understood no language but his own, and through this he lost his life. He was laboring in a breast for two miners named Martin Shugart and Edward Boettinger. This place was opened narrow at the gangway, and then widened out to about eight yards. Only the seven and four-foot benches were worked in this place, opening in the seven-foot, and blasting the four-foot afterwards. Above the seven-foot there was a thin piece of slate, with a few inches of bony coal sticking to it, which was left up from the commencement, as the miners considered it safe, and afterwards said that they had often examined it and thought it was sticking to the roof. The afternoon previous to the accident, John Airey, general inside foreman, was in this place and found the men opening in the seven-foot, and asked them to sound the roof, which they did, and said it was all right, and most likely it was at that place, which was near the face.

About 8 o'clock next morning the two miners in the face heard a crack, and called on their laborer to keep back, but as he couldn't understand, he came toward them, walking right into the jaws of death. Suddenly the whole piece fell, about seven yards each way and about six inches thick, killing him instantly.

The deceased, when he was called, was sitting in the cross-cut, and perfectly safe. This accident I attribute to the carelessness of the two miners, as they should have known that such a thin piece could not sustain its own weight in such a wide space, and I am confident that they never examined it (notwithstanding their testimony) but now and then close to the face, and possibly it might have sounded all right there, but common sense should have taught them to take it down.

No. 21.—John McGill, second, laborer, aged twenty-two years, was fatally injured by a fall of slate on the gangway in B seam, Council Ridge No. 5, July 17, and died August 15.

John McGill, first, was the miner in this case, and had just started to turn a breast from the gangway, and had fired only a few shots when he called for a car, which the laborer and himself commenced to load. Suddenly a piece of the dividing slate fell on the laborer. This piece measured three feet by two feet, and six inches thick. This dividing slate is very treacherous, which the miner knew, and, by all means, should have barred it down before commencing to load the car. The gangway men that worked close by testified that the miner neglected to take down the slate, as he should have done after firing the first shot, and also left it standing after the second shot; and in the light of the above facts, my opinion is

that deceased came to his death through the carelessness or recklessness of the miner.

No. 22.—James Cannon, miner, aged fifty years, was instantly killed by a fall of clod, near the face of his breast in Wharton seam, in Humboldt, July 20.

On the 15th day of June I was in this place, and considered it safe, and worked as well and as skillfully as any place in the mine, there being plenty of props and well put up. When I examined the place after the accident I found the props on one side within five feet of the face, and on the other side seven feet from face. If I had examined it before the accident, I could have only suggested that a prop should be put in the seven-feet space; but even that would not have saved him, as the piece that fell had the shape of a fish, narrow at both ends, wide and thick in the middle, and it dropped right above the center of the track.

Possibly, if the miner had made a minute examination, he might have detected the bad piece; but the mine-boss had been there the afternoon of the day previous, and he testified that he examined the place and saw no sign of any crack or slip where the piece fell from. I consider this one of those unforeseen accidents, against which it is hardly possible always to guard.

No. 23.—Jacob Lukavitz, laborer, aged thirty-seven years, was instantly killed by a piece of top coal in B seam, at Sandy Run, August 10.

This is another of those unfortunate accidents where men lose their lives through the carelessness of others. The miner had ordered him to work in a very unsafe place. By the appearance of the place this miner was totally unfit to have charge of any working place. The place was completely riddled with holes, there was a great deal of loose coal hanging, and yet there was not enough to load a car down. The miner admitted that he called on the laborer to come and put some coal in the chute, and he claims that the laborer would go on the other side from where he was standing to get some coal, and persisted in his story that he called on him several times to come from that place, as it was not safe, but insisted that the laborer would not listen to the calling. In the meantime, the piece, weighing about four hundred pounds, fell, striking him and crushing his skull. The reason, it seems, that the laborer would not listen was that he understood nothing of what was said to him, and likely, the more the miner called the harder the poor fellow worked to get enough coal to load the car. The laborer undoubtedly went where he could get some little coal, which was scarce, indeed, in that place.

No. 24.—Frank Cannon, miner, aged forty-six years, was instantly killed in the Mammoth seam, at No. 4, Lansford, August 23.

Cannon and James Mulherrin were working a breast on the east side of said slope. Each miner, as is generally the custom, worked his own side of breast and carried up his own manway. The fire boss, in going his rounds that morning, failed to make the usual examination of this place, as when he went up to the top of the manway he found the place working

and considered it unsafe to go in. He therefore made it a point to meet the men before they went to their breast, and told them the above circumstances, and said to them also, that if they went up, they should go up on the outside manway, and listen, and judge for themselves. The men obeyed his instructions and sat in the cross-cut until nearly nine o'clock, when they decided to start to work, as the place had quieted and they thought it as safe as usual. In about half an hour, as Mulherrin's first hole was in only about two feet, a piece of the four foot, in which Cannon was drilling his hole, fell, with the above sad result.

The day following I visited the place of accident and went up the outside manway, but did not cross the breast to where the man was killed, as I considered it unsafe, as the coal was working, and I went down and up through the other manway and into the breast, as near as I could in safety, to where the man was killed. The coal was still working and about one hundred tons fell the same afternoon. Both manways were made good and strong, which proved that the men were good workmen, but they made a fatal mistake in not going home when the fire boss told them that he had failed to make the desired examination, because he considered it unsafe to do so.

The seam here is about forty-three feet thick, having an angle of 69°.

No. 25.—William Milfisky, miner, aged forty-six years, was instantly killed by a large piece of coal falling on him in B seam, at Council Ridge, No. 5, August 2[illegible]. Deceased, in this case again, couldn't say a word, except in his native tongue. He asked through another man for work, and said, through the same source, that he had mined in several places, and, on saying this, he was given a breast. He only worked a few days before he met his death. A few days previous to the accident I went through this man's place, in company with the mine boss, and called his attention to the fact that the man knew nothing of mining coal, when he told me the facts above stated. It is likely that this falsehood cost the man his life, as a witness that knew him testified on the inquest that he came to the country but a few months previous, and that he had labored inside of the mines only about two weeks. Another Hungarian testified that he called with deceased, knowing that he didn't know much about such work, and found him preparing to drill a hole in the piece of coal that killed him, and, in doing so, stood right under it. Witness told him the piece was ready to drop, and that he should get out of the way, and put a hole near the pillar, which would bring it down with the other coal, and left, thinking that he would do as directed. But, by the testimony of his laborer, another Hungarian, he tried to get it down without putting a hole in it, and in doing this he stood right in front, and when it fell it completely covered him. I should say that the lump would weigh about four tons. This was the first accident during the year. I thought that the inside boss had neglected his duty in not going through each place at least once per day. He had not visited the place since the day that he went through with me—the 23d—two days previous. An inquest was held before 'Squire Dobson, of Free-

land. The jury were all miners, and picked from the place because of their known intelligence. I explained the law, as I understood it, and read part of section eight, which gives the duty of mine bosses, but not as explicitly as could be desired. I explained, also, the different views on the matter, and said that I didn't want to punish the inside boss for this offense, but wanted to take the matter before the grand jury, and, if they saw fit, to try it in court. I thought then, and still think, that it is the duty of a mine boss, or assistant, to visit every working place at least once per day; and, perhaps, if the mining boss had been at this place a few times the last two days, he might have been the means of saving this man's life.

After my explanation, the jury completely ignored the only point at issue, and brought in the following: "That the deceased came to his death by his ignorance and lack of knowledge about coal mining."

No. 26.—William Ashman, miner, aged twenty-six years, was fatally injured by a fall of rotten top, in B seam, at Upper Lehigh, No. 1, September 14. Deceased was doing the precarious work of robbing pillars, which is dangerous, at best, but much more so at this place, on account of the extreme rottenness of the roof. The place was well timbered, and everything around showed that the man was careful. When in the act of making a hole for a prop between two others, a small piece fell, knocking him down, and, before he had time to recover himself, another larger piece, about two hundred pounds weight, fell, and struck him between the shoulders, injuring his spine, and paralyzing his lower limbs. He suffered greatly, and his death resulted next day.

No. 28.—Edmund Wren, miner, aged thirty-seven years, September 23d, was fatally injured by a small piece of clod striking his head while engaged in blasting the bottom, preparatory to starting a tunnel in Wharton seam at Mount Pleasant No. 1. This was a peculiar accident, as the fatal piece did not weigh more than two pounds, and could not have gained much force falling a distance of about ten feet.

He was struck senseless, but recovered in a few seconds and asked what had struck him, thinking the man with the hammer had done it. He was able to walk home, and the doctor said he would be all right in a few days, and his friends had the same opinion. He said he felt first-rate, and chatted pleasantly with all around; but about ten o'clock the same evening, he became suddenly worse, and died in a few hours. The impression prevailed that he was suffering from some other disease, and that the blow on the head had only hastened his death.

Above the coal, at this place, there runs a thin strata of clod and bone, which had been taken down to this point, when on account of its being so hard to take down, and as the place was only about twelve feet wide it was considered safe, which doubtless it would have been if the blasting had not interfered with it.

The blasting was done by lifting holes, which every time they were fired the rock from the bottom struck the top with great force. In my opinion

one of these blasts broke the small piece loose from the thin layer of clod and bone overhead, and this falling with some force inflicted the injury above stated; but I am not prepared to say that this was the cause of his death.

No. 29.—John Goshen, laborer, aged twenty-three years, was fatally injured by a fall of coal in B seam, at Cross Creek No. 2, October 2. Died on the 4th of same month.

The miner, it seems, fired a shot in the top coal, which failed to bring it down, therefore he had started a hole in the bottom coal, which he thought would accomplish his purpose. While engaged at this the top fell, with the result as stated. The miner escaped by the coal falling outside of him.

The immediate cause of this accident was a back slip running through the top coal, which likely was not detected by the miner until the coal fell.

No. 30. Thomas Costello, miner, aged forty-six years, was instantly killed by a fall of coal in Mammoth seam, at Lattimer No. 2, October 5.

Deceased and a miner named McLaughlin were working this breast, which is on the north pitch, to meet another breast which had been driven on the south pitch. The place had been driven to the apex in the bottom coal, which had been reached a few days previous, the angle north and south respectively being 14° and 24°.

The day of the accident they were engaged in breaking through the benches, both barring a large piece, when they heard a crash. Deceased jumped to the manway side and McLaughlin back toward the south pitch. Both were caught by the coal. Costello was instantly killed, while his partner was knocked down and but slightly injured. Deceased was found with a large piece of coal about eight feet square and two feet thick resting on his body. When I examined the place I found it in good shape, the manway good, and carried right up to the apex. I did not consider the place safe for men to bar down coal in, but it could have been taken down with safety had the men put in a few blasts. In my judgement, they made a fatal error in barring when they had no safe retreat.

Deceased was considered a good and careful miner, and had mined in this slope for seventeen years. I should also state that this is the first death in this slope from fall of coal for sixteen years, which is a very good record.

No. 31. Daniel Brennan, miner, aged thirty-seven years, was fatally injured by a fall of clod, at Mount Pleasant No. 2, October 6.

He was sinking a prop-hole when the clod fell, which hurled him down the pitch, doubling him up, and breaking his thigh. The attending physician did not consider his injuries serious.

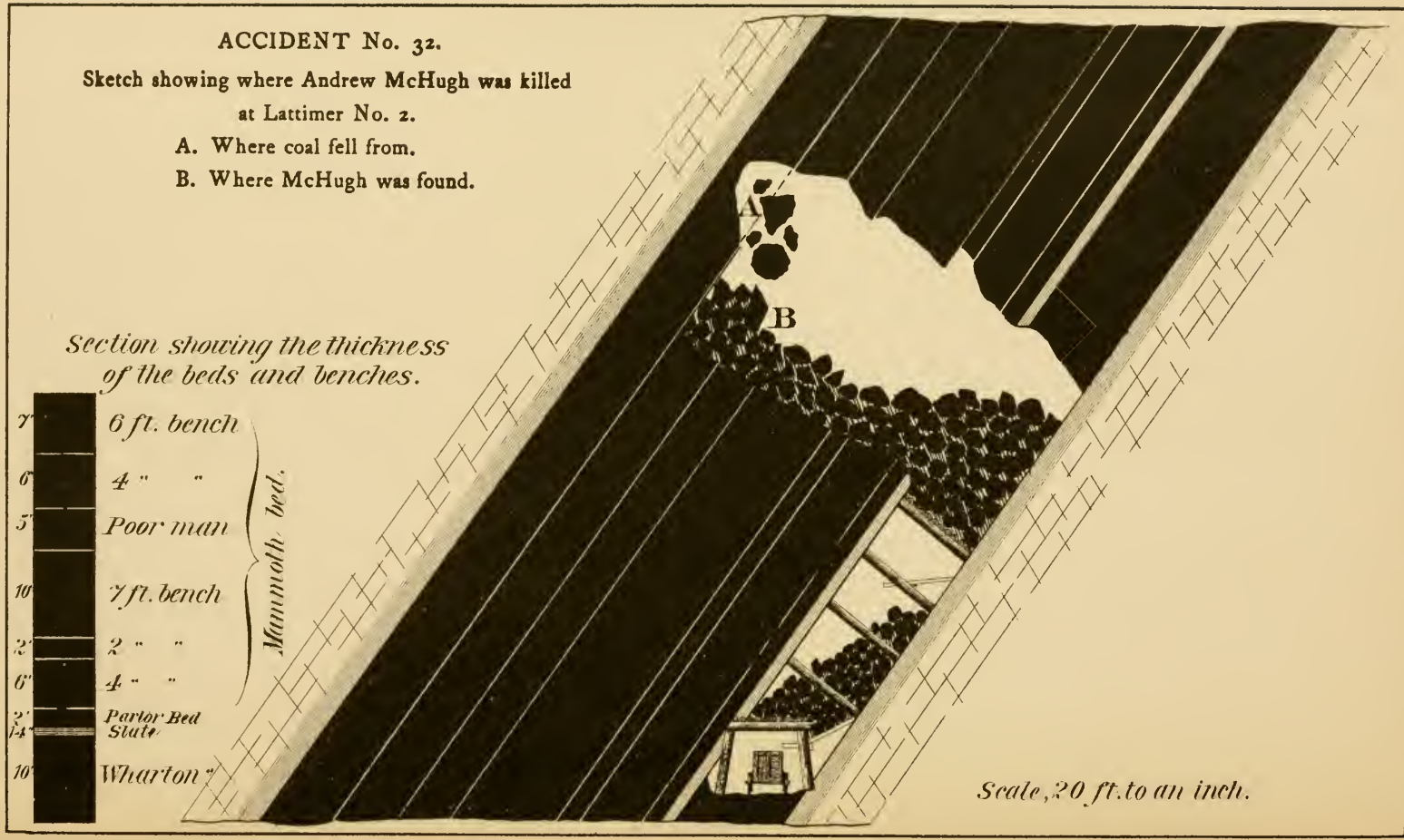
He was taken to the Pennsylvania hospital, at Philadelphia, on the 12th of the same month, where he died on the 16th. The prevailing custom in this district, of sending men away for treatment, I think is entirely wrong and uncalled for, and I have no hesitation in saying that several lives, which might have been saved by proper treatment at home, have been sacrificed to the whim of parties concerned. It is right to state that the com-

ACCIDENT No. 32.

Sketch showing where Andrew McHugh was killed at Lattimer No. 2.

A. Where coal fell from.

B. Where McHugh was found.



pany is not responsible for sending deceased to Philadelphia, but his friends thought he would get better treatment there.

No. 32. Andrew McHugh, miner, aged forty years, was instantly killed by a fall of coal in the Mammoth seam, at Lattimer No. 2, October 11. Deceased and partner, while firing a blast, went down to the cross-cut, at the bottom, for safety. After the blast exploded the partner went down to the gangway to load a car, leaving deceased sitting on the cross-cut. After loading the car and cleaning the road, which probably took him about twenty minutes, he went up to the battery, and not finding McHugh, called up the man-way, to see if he had gone in the breast. Receiving no response, he called in the next breast, thinking he might have gone there. Getting no answer, he concluded that McHugh had gone to the chambers on the other side, and he then went in the breast to see what the blast had done. He stood for a little while, looking where to put the next hole, and a small piece of coal fell, striking something that had a kind of dead sound. He looked around, and saw his partner's leg sticking out from under a mass of coal. He gave the alarm at once, and willing hands responded, and the body of his late comrade was soon removed. He must have been killed instantly, as a large piece of coal, about a ton weight, was taken from over his chest. It seems that the deceased went up, and saw that the blast had not done its work, and with a drill in his hand he must have attempted to cross the breast to the other side. While so doing the coal must have fallen, and he was caught. To corroborate this view, the large piece that was taken off his body had a part of the hole which they recently had fired, and the blasting-barrel still sticking in the hole.

The seam of coal here had a pitch of 56°, and was about fifty feet thick. The breast was up just far enough to cut through the top coal, which has a certain amount of risk always attending it, but here the seam was very regular and strong—everything had to be blasted. This place would be considered safer than the general run of places. They had successfully cut through all the tiers of coal except the top tier, which is generally called the six-foot, and in this but few holes had been blasted, the one that proved fatal being the third. The four-foot, which underlies the six-foot, was cut through about twelve feet wide. The top, or six-foot, is generally cut as narrow as possible, averaging about six feet wide. If the top slate above this is shaly and rotten, the top tier of coal is left up for roof, otherwise, if the top is found good, the top coal is taken down to the width of from twelve to eighteen feet, more or less, according to the strength of the roof. This is an accident for which no party can be blamed, unless it is the deceased himself. If he had to cross to the other side of the breast, he should have gone down and up the man-way, which he could have done in safety.

No. 33.—Bernard Cull, miner, aged 50 years, was fatally injured by a fall of the lower bench in Mammoth seam, at Cranberry, October 24, and died on the 27th. John Cull and deceased were working a breast together, and

were blasting out the bottom, called the seven-foot, which is here only about four and a half feet. The benches were undermined partly across the breast. When the accident happened they were tamping a hole in said bottom coal. The piece that fell was about eight feet long and varied from three feet to one foot in width, and it struck deceased diagonally on his back, knocking him against the coal with such force that his skull was fractured, and his leg broken above the knee.

With any degree of care on the part of the miners this place could have been made very safe, as it had an angle of 18°, the chute being in the center up to the face. The piece that fell was within reach, being only four and one half feet from the bottom. The slip that came through the bench could be seen, and was seen, as the surviving partner testified that they had intended to take it down after firing the shot. The old story over again, but too late, unless it will prove a lesson to others, not to leave any coal up, of the soundness of which they have any doubt. If there is any way to reach it, take it down; if not be careful to keep from under it.

I found in my investigation that the mine-boss had not visited this place that day, if he had he would have ordered the men to take that doubtful portion down at once. I am more and more convinced as time passes, and my observation extends, that working places should be visited at least once per day by the mine-boss or one of his assistants, and oftener if the place is exceptionally dangerous.

No. 34.—Theodore Hill, laborer, aged twenty-one years, was instantly killed by a fall of coal in the Wharton seam, at Coleraine No. 2, and died October 4.

This was a very sad affair, indeed. The young man had been employed as a brakeman on the Lehigh Valley railroad, and gave up the place, as he considered the work dangerous during the winter months. Upon application he succeeded in getting a place to work, which was apparently as safe a place as could be found in the mines. He was engaged to load coal, and this was his first day for James Rowe, who was opening a narrow chute, through which the coal from an airway above was to reach the gangway. This place is called the perpendicular, having a pitch of 70°, and is about ten feet in thickness, but not very strong coal. To make room for cars and mules to pass, the place is timbered by stringers being fastened into a niche in the rock, top, and bottom. Above the stringers the coal is kept in place by means of laggings and blocks, giving the place a very safe look. The stringers generally are about ten inches in diameter, and about four feet apart, and between two of these stringers the narrow chute referred to was being opened. When the place was started the testimony of men that worked close by showed it to be well blocked each side of the stringers. When the accident occurred the place was up about nine feet from the timbers, and in going up the coal must have dropped above this blocking on one side, leaving an open space; therefore, there was nothing to support the coal. A hole had been blasted a short time previous, and

after giving the smoke time to clear, the miner went in and called on deceased to hand him some laggings and blocks, as it seems the last shot had weakened this same side again. While in the act of handing up the laggings the coal fell, breaking one of the stringers, and knocking the other sidewise out of the niche, the miner falling with the coal, and both men being covered up by fine coal. Others came to the rescue at once, and found the miner in a few minutes not much the worse off, apart from being nearly smothered. A search was then made for the laborer, who was soon found, but was dead, his neck having been dislocated. By all appearances the laborer stood right under the prop that was broken, and must have been killed instantly. The miner is considered one of the best in the place. I think, however, that he took too much risk in not keeping this side properly blocked. Very little was required to hold the coal in place, yet it was not strong enough to support itself. The miner insisted that the place was properly blocked, but I have my doubts in the matter. If it had been properly blocked, the coal could not have fallen in such quantity and with such force as to break the stringer.

No. 35.—Patrick Boyle, laborer, aged twenty-eight years, was killed by a fall of clod in Wharton seam, at Yorktown No. 6, December 13.

Deceased worked with his father, which makes the case more distressing, inasmuch as the accident occurred through the want of proper timbering. The seam at this place is about eight feet high, and lies at an angle of 22°. This, as other breasts, was opened narrow from the gangway, and widened to about nine yards, with two rows of props in it, which were put in very irregularly, and having entirely too much space between them. The mine-boss had been in this place the morning of the previous day, and ordered the miner to stand three props immediately, as he saw at a glance that the clod was getting bad. He marked the places for these props, and testified that had the props been put in as directed by him the clod could not have fallen. The mine-boss, meeting the miner the morning of the accident, asked him if he had put in the props, to which he answered that he had put in three, and that the place was now all right. As I could see after the accident, the props had been put in, but could not have been put in their proper places, as otherwise the piece could not have fallen. If the mine-boss had gone to this place that morning, undoubtedly he would have found that the props were put in the wrong places, and would have ordered others to be put in at once; but taking the man at his word, he thought no more of it, until told that there was a man killed there. Between the two last props on left hand side there was a space of eleven feet, and here between No. 1 and No. 2, as marked on sketch, the boss had ordered a prop to be placed, and two more on right hand side. As can be seen also on sketch, the prop marked No. 1 was not a particle of good, as a slip was going through the clod each side of it, and this was the immediate cause of its dropping so suddenly. When the clod broke loose on the No. 1 side the props on the other side were of no use, as they were struck sidewise and knocked out of place.

The deceased was putting coal into the chute when the clod fell, and he was suddenly hurled into eternity. The miner had been mining coal for upwards of twenty years.

No. 36.—Michael Cannon, miner, aged forty years, was fatally injured by a fall of coal in his breast in the Mammoth seam, at Lansford No. 4, December 17. He died while being taken down the manway. Deceased and a miner named Higgins were working this place together. It seems that the coal on the side of the breast belonging to deceased had been working more or less during the morning, causing him to keep inside of his manway. He crossed over to Higgins once, and stayed there quite a long time, then went back, thinking the coal would not fall, as it had quieted greatly. In a little while his partner heard him barring some loose coal down, when suddenly about forty tons fell, entirely covering him. His partner at once gave the alarm, and the first man to respond was David Evans, when both at once commenced the work of rescuing their supposed dead comrade. But when found, he spoke sensibly, saying that they should hurry to get him out before more fell, and while thus engaged, another fall occurred, injuring both men severely. Plenty of willing hands were ready and eager for the work of rescue, but owing to the dangerous aspect of the place, the mine-boss had to take the men away several times, fearing more lives might be sacrificed. During these hours of agony, the cries of the entombed men were pitiful. John Watkins and Daniel Boyle deserve great credit for their bravery and pluck in their efforts for his rescue. Too much praise cannot be given to Mine-boss Whilding, for his tact and foresight in securing the place as he did, thus making it comparatively safe for the men during their perilous work of relieving Cannon. When he was released it was found that his left hand had been completely cut off, and while being taken down through the manway he died, likely from the loss of blood. The accident happened about twelve o'clock, and it was nearly five in the afternoon when he died. The seam here has an angle of 70°, and only about twenty-seven feet of the coal mined. It is very injudicious for these men to bar coal on such steep pitches. Deceased was found near the center of the breast, a place where no man should be barring coal, as the coal in these places can always be blasted down without going so far from the manway, as this is the only safe place above the battery. Deceased was a brother to Frank Cannon, who was killed nearly in the same way on the 23rd day of August of the same year.

Fatal Accidents by Mine Cars.

No. 1.—Bernard Conlin, miner, aged twenty-two years, was found fatally injured on the gangway at Mount Pleasant, No. 1, January 3, and died the same evening.

Deceased jumped on a trip of empty cars that were being taken inside, and somehow fell, and the cars ran over him. Deceased, with a number of other miners, was working in the upper gangway in Mammoth seam, which had a large number of day falls, which made the place very cold. On ac-

count of this cold the men loading had a practice of going back several hundred yards to the stove between each trip, and when the driver was taking in an empty trip some of them would jump on the cars and others on the bumpers, while others would walk. To-day, according to the testimony of James Quinn, the man that stood with deceased on the gangway when the trip was passing, Conlin appears to have jumped between the cars, and when cars were entering the inside turnout from the main road they had to make a short curve, and at this place he was either squeezed between or fell under the cars. Quinn rode on the bumpers of the hind car, and did not know that deceased had fallen. As soon as he went in he commenced loading his car, and immediately heard groaning. Thinking it was his partner up the breast he called to him, and finding him all right, went back in the gangway about thirty yards and found Conlin lying on the track. Quinn said "I asked him what happened, and Conlin replied that he didn't know, but asked me to raise him, which I did, and he walked across the track with my help, and sat down on a box. I then called some other men, and he was taken out." The doctor testified that his lungs were crushed. There is no party accountable for this accident except the man himself, as the orders were that nobody should ride outside of the cars.

No. 5.—Robert Potts, driver, aged twenty-one years, was fatally injured by being crushed between cars and door on the gangway at Oak Dale No. 1, February 5, and died the same day. The circumstances are as follows: The deceased was one of two drivers that took all the coal to the foot of the slope from this gangway, running sometimes eight, and sometimes ten cars a trip. There were four doors on this gangway, and only two boys to attend them; one boy to go before a driver and open the doors, and the other to follow the driver to shut them. The boy had been sent ahead this time, and was supposed to have had time enough to open the doors. The driver started, riding in front of the trip as usual, and when within a short distance, saw that the door was not properly opened and called to the boy to open it; with that he jumped off on the other side, and somehow got entangled in the traces and fell; the cars kept on, taking door and all with them, and crushing the driver in a shocking manner. He was taken home where he expired. On the inquest I explained to the jury—who were all miners—that the company had violated the law in not putting attendants at all main doors, and showed them, also, that one boy could not be depended on to run before the driver to open all the doors, as he might get in the dark and fall and the cars and mules run over him, and that the mules and driver were liable at any time to run against a closed or partly closed door, as in this case. The door-boy's testimony was that he had opened the door but failed to fasten it, and was trying to fasten it when the driver came.

Yet, after this testimony, the jury brought a verdict "that deceased came to his death through the neglect of the door-boy, but advised the company in future to put boys to attend each main door, as the law required."

No. 9.—George Mowery, driver, aged nineteen years, was fatally injured by mine cars at Hollywood, No. 1, March 27, and died on the 30th. Deceased started his team, and in attempting to jump on while the cars were going at a rapid rate, fell, the cars passing over him. This accident was caused by the driver's recklessness in starting the cars at such speed, and in his vain attempt to jump on.

No. 19.—George Morton. helper, aged 14 years, July 6, was fatally injured at West Cross Creek by a mine car. In attempting to sprag the car he fell, the car running over his right leg, making a severe gash, about twelve inches long, and also bruising his foot.

He was not considered seriously injured, but died on the 10th of same month, through his stubborness in refusing to have it treated properly, if the report I received is correct. His parents probably did not think the case dangerous, and indulged the boy in having his own way.

No. 40.—Condy O'Donnel, laborer, aged 19 years, was fatally injured by mine cars, at Highland No. 2, December 27, and died the same night. Deceased was one of the gangway laborers, and in coming out after his day's work he jumped upon the front end of a trip of cars, by the side of the driver, who told him to get off as there was not enough room for both. But he stayed on in spite of this protest, as otherwise he would have to walk back several hundred yards, as three men were riding in rear end of the trip occupying all the room. Every thing went on well until they were within about five yards of the passing branch, which was as far as this driver went, when deceased attempted to jump off, or was caught by the platform, which came within six inches of the cars. The general opinion of the men present was that his dinner cans which were suspended by a strap over his shoulder, caught the said platform, and he was drawn between the cars and platform, two of them passing, him while jammed in this six-inch space. The driver, the instant he saw the man falling, jumped and spragged the cars, or the whole trip would have passed him. Zod Evans, one of the first men that came to the place, testified that he found deceased jammed between the cars and platform, and to get him out without moving the cars, which would give him more pain, he had to tear up the platform. When released he dropped unconscious into the arms of one of the miners. He never uttered a word but groaned considerably. The mine-boss and driver-boss testified that it is a standing rule, that no party whatever is allowed to ride with the driver, and accounted for this man riding, by the fact that he was a new comer, having been in the mine only about two weeks, and did not know the rules. No party except the man himself can be held responsible for this accident. Perhaps the driver could have put the man off by stopping his trip and refusing to start unless he stayed off, but drivers are not made of that kind of stuff. They tell a man to get off, and if he fails to do so they care nothing about the results.

Fatal Accidents by Explosion of Gas.

No. 39.—Robert Brunskill, fire-boss, aged forty-six years, was fatally in-

jured by an explosion of gas in lower Laurel Hill December 19th, and died the following day. That morning deceased had traveled all through the mine, and was going into the last breast, which was being opened at the time, and no cross-cut was driven. Deceased knew that he would find gas in this breast as it was found there every morning. By all appearances there was more gas in the place than usual. The deceased took his naked light from the gangway to or near the top of the man-way, and according to his testimony, (he being the only one present,) while in the act of hanging his naked lamp on a man-way prop, intending from that point to take only his safety lamp, the gas exploded, and after that he knew nothing more, as he was thrown senseless into the gangway. He subsequently became conscious, and managed to get back through the gangway, some three hundred yards, without light. His injuries were not considered serious, although he was severely burned, yet death occurred, as stated, from inhaling the flames. This is one of the best ventilated mines in this district. The chambers are ventilated in sections of two, three, or four in each split, making the mine entirely free from gas when the chambers are opened, cross-cuts driven, and man-ways kept up to the face. I consider this one of the safest of the mines generating gas in this district, and deceased (although considered good, careful, and competent) acted as a careless and reckless man would, showing extreme indifference to the results. Deceased had been an underdeputy in England for about nine years, and in the face of his long practice, inviting death as he did, is to me a problem that I cannot solve.

By Premature Blast.

No. 10.—Andrew Fencik, Hungarian laborer, aged twenty-six years, was instantly killed by a blast blowing through the pillar to a breast he was working in at No. 2, Drifton, April 11th. Cornelius Cook testified, "I was sent by the mine boss to break a hole through into breast No. 63. This counter was driven nearly through into said breast when I was sent there; listened awhile and heard the man in breast, named Michael Brislin, drilling very close, as I thought; went around to his place, a distance of about three hundred feet, and told him that before he fired he should give me the usual signal, and that I would do the same to him. Brislin was the first man to fire, and gave me the signal, to which I responded, and went to a place of safety. Soon afterwards I had my shot ready, and gave the usual signal with the butt of my drill; hearing no response, I signalled again; still hearing no response, I thought both were down on the gangway, and, without further thought, I touched the match and went back. The blast going off, blew through the pillar, and, to my horror, killed the laborer, who was standing within ten feet of the pillar, and nearly opposite my hole." Michael Brislin, the miner in the breast, testified to the correctness of the above statement, and, further, said that when Cook gave the signal he had just gone down to the gangway to see if the laborer (deceased) had put the chute-board right before dumping the buggy; that he was not away five minutes, and was starting back

when he heard the shot blowing through the pillar; he hastened up, and found his laborer lying dead, with his skull crushed. In answer to a question, he said that he had always to go and examine the chute before dumping the buggy, as several times after dumping without going down, the coal had run to the gangway, the laborer forgetting, or not knowing enough, to put the chute-board right. He also testified that the laborer (deceased) was standing by when the understanding was had with Cook about signalling, but that he could not understand a word of what was going on, and that he couldn't make him understand anything except to load the buggy. He never thought of any danger to deceased from the blast through the pillar; in fact, he never thought anything of it beyond giving the signal when ready to fire, and answer to signal from the other side. After this testimony, and much more of the same kind, I could not conclude that Brislin was responsible for the man's death. Cook, I think, made a fatal mistake in firing the blast without receiving a response from Brislin. It was his duty, beyond a doubt, to go around to Brislin's chamber before firing, and notify him. If that had been done, the man would not have been killed. On the other hand, if deceased had understood even a little of the English language, he could have saved himself; but, being ignorant of it, and of the method of signalling in coal mines, and nobody being able to instruct him on account of his inability to comprehend, it is hardly fair to place the blame on him. However, the burden of his death lies at the door of somebody: either the mine boss, for hiring such men before they can understand a word of English, or Cook, for not making sure that no person was in danger before he blasted, is responsible; perhaps both are censurable.

Falling into Slopes.

No. 4.—James O'Donnel, miner, aged sixty-five years, was instantly killed by falling into No. 7 inside slope at Lansford, February 13.

Deceased with other men were hoisted up the slope, and he started out through the tunnel; but for reasons unknown turned back and walked right into said slope, which has an angle of 70°. The topmen at this time were changing cars from one side to the other; carriage on other side being up on the fans. McDish, the head topman, saw deceased turning back, and thought he had left something behind, and caught a glimpse of him as he fell. I consider the top of this slope dangerous, and had requested the superintendent to put up four gates, two in front and two at the other side of the slope, and have them to work easy, so the topmen could handle them, or have automatic doors instead, that would open when the carriage came up, and close when the carriage went down. The doors or gates were put up, and I considered the place much safer. The topman, McDish, left one gate open, and fastened up, as he claimed, on account of its being about quitting time, and the men were continually coming up. He also claimed that it was hard work to open the front gates every time, which was somewhat substantiated by my investigation; but he had made no

such complaints to either the mine boss or superintendent, and the testimony of both was that they (each of them) had given him positive instructions to see that the gates were kept closed except when cars were being put on or taken off, and when men were passing in and out, and they also testified that they never saw the gates open at any other time. After hearing the above testimony, and much more of the same kind, the jury brought in the following verdict: "That deceased, James O'Donnel, came to his death by falling into No. 7 slope, owing to the neglect of duty on the part of John McDish, one of the employés of the Lehigh Coal and Navigation Company, by not keeping the gates shut when men were being hoisted."

Fatal Accidents on Surface by Breaker Machinery.

No. 38.—John Konador, slate-picker, aged thirteen years, was fatally injured by falling into the screen in the breaker, at Oak Dale, No. 2, December 18.

While some men were being hoisted from the slope, the boys in the breaker had nothing to do. Some of them ran outside to play, but deceased through curiosity climbed above the said screen and slipped and fell into it, sustaining severe injuries on his leg. It was deemed necessary to have it amputated, but a few hours afterwards he died. This boy came to his death by climbing to a place where he was not allowed to go. Breaker bosses should make examples of all boys caught in places in which they have no right to be.

This was the first and only fatal accident through machinery, inside or on the surface, during the year, and it shows that great care has been taken by all concerned.

By Railroad Cars near Breakers.

No. 11.—John Bony, loader, aged twenty-one years, was fatally injured near Hazleton mine breaker, April 26. Died in two days afterwards.

Deceased was running two cars to be loaded at the breaker, and instead of standing on the rear end of the rear car, stood between the cars, and when the cars came to the embankment at the back switch the rear car mounted the bumpers of the forward car, (on account of their great speed,) squeezing the man badly about the hips and dislocating one. Loaders at this place generally jump off when the cars come to the back switch. If he had done so, or run them in at less speed he would have been all right.

No. 14.—George Riley, loader, aged eighteen years, was fatally injured by falling under loaded cars while running them from under No. 2 breaker, at Lattimer. June 1.

Deceased had been a loader at this place for a number of years, and was considered a good careful young man. This day he was running a loaded trip, as stated, and likely had given the cars too much headway, and in endeavoring to stop them he pulled stronger than usual, broke the brake iron, lost his balance and fell under the cars, which ran over him, fracturing one

of his legs and injuring him inwardly. He died in a few hours after being taken home.

No. 36.—Michael Karac, loader, aged thirty years, was instantly killed by falling under empty cars near breaker No. 3, South Sugar Loaf, December 15.

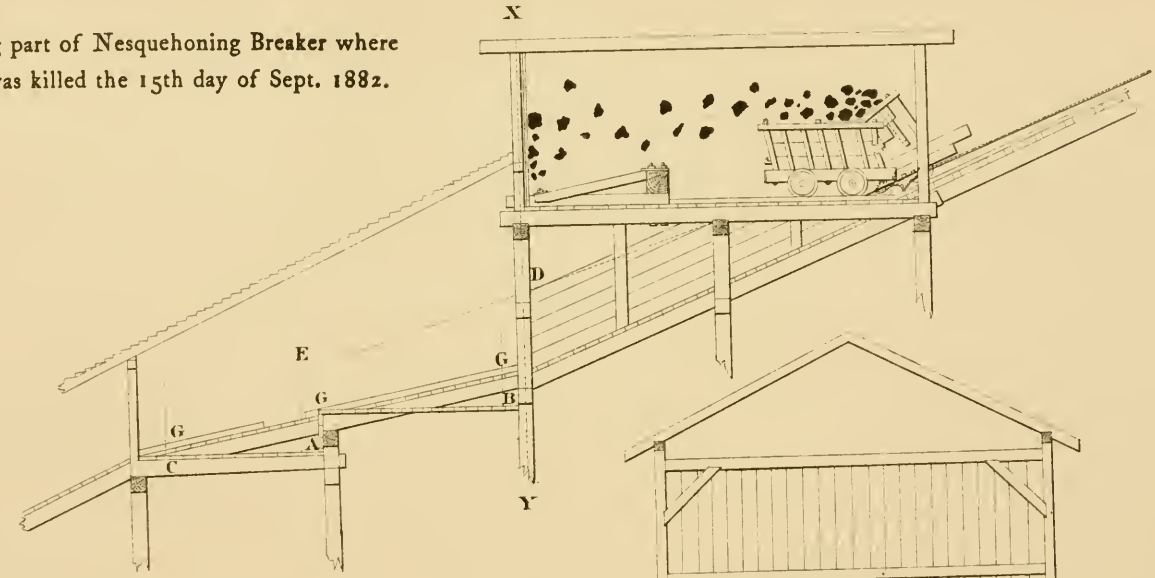
While another loader was running a trip of empty cars to the breaker, deceased went to meet him, and in attempting to jump on, fell under the cars with the result stated. These accidents by railroad cars on surface are merely fatal blunders, except the one at Lattimer, which might be termed an accident. Nobody had any control over these accidents except the parties that suffered.

Miscellaneous Fatal Accidents on Surface.

No. 8.—John Watkins, laborer, aged thirty-five years, was fatally injured by prop-timber falling on him while helping to unload sticks from a flat-car that stood on the siding at No. 2, Coleraine, on the 10th of March. Deceased was laboring for a man named Rowe, in a gangway. This day they came out with the purpose of cutting a few collars to replace old ones. Seeing no timber that suited their purpose on the bank, they went down to get some off the flat-car. In doing so Watkins was injured, and died the next day. The parties had no orders from boss or superintendent to get timber from the car, and therefore they had no right whatever to take any off, even if there was no other suitable timber. In looking on the bank I saw a number of sticks that could be used for collars, but perhaps not as straight as those on the car. If anybody is responsible for this man's death it is the miner, as the laborer had to go with him.

No. 16.—Andrew Solock, laborer, aged twenty-three years, was instantly killed by being drawn into the chute at Hollywood stripping No. 2, June 24. Some time previous a plane was made from the surface to the basin, to hoist the dirt and rock from the stripping instead of shoveling it into cars and taking it away by mule-power. To do this it was necessary to build a chute, which connected with one of the surface-holes, and into this hole the ground all around was loosened by blasts and run in. Deceased was one of the men that was doing the drilling within four or five feet to the edge of this hole. Having lost the scraper, another man was sent to an adjoining party for one. He returned and threw it down near deceased, and it slipped over the edge into the hole, which, at the time, was filled to within three feet of the top. To get the scraper, deceased jumped into the hole, when the stuff started, and he was drawn in, and so lost sight of in an instant. The men below were notified not to draw any more, and the place was secured, and a search was made for the entombed man, who was found underneath about two feet of the cover, standing upright. The Hungarians became excited, and made no effort to get the man out until the bosses came. Probably, if they had made an immediate attempt to rescue him, he could have been taken out before he smothered. The reason of this sudden sinking of the stuff, was that the chute inside had

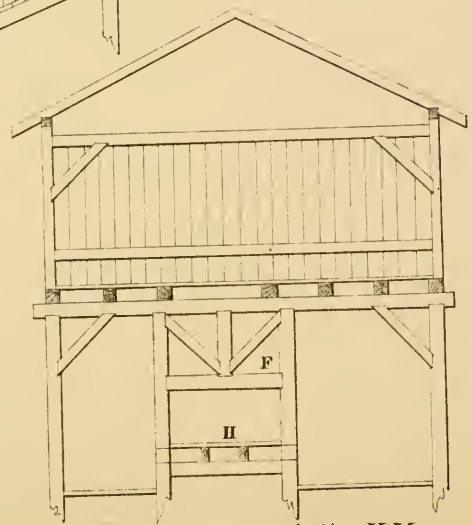
Sketch showing part of Nesquehoning Breaker where Patrick Markey was killed the 15th day of Sept. 1882.



REFERENCES.

A. Position occupied by Markey.
B. " " " platform man on same side.
C. " " " " " " "
D. Course taken by flying missile that hit Markey.
E. Position of Markey's head when struck.
F. Course taken under brace over dump chute H.
GGG. Platform on which Markey was working.

Scale 1/4 ft. to the inch.



Rear view through line X-Y

been blocked for hours, and all the stuff around the mouth of the draw-hole was shoveled into the chute, making a large empty space for the stuff when it started. The men below, of course, thought of no party in the opening on the outside, and knew nothing until told that a man had been drawn in. The deceased, alone, is responsible, as he was fully aware of the danger, and was told, that under no circumstances should he or any other persons go into the hole.

No. 17.—Nicol Marino, laborer, forty-seven years of age, was instantly killed by a fall of ground at No. 6 stripping, June 28. Deceased was engaged as one of the pick-men, and had been at that work for about three months. At this place the ground was not very solid, and from a foot to eighteen inches was as far as they generally undermined the bank which was about ten feet high. In doing this, two or three small pillars were left in a section of about fifteen feet in length for safety to the men. Deceased was commencing to take out one of these pillars when the foreman saw him and took him back, and motioned that he should go on top of the bank and bar it down, and by that his (the foreman's) attention was called to some other matter, and in less than five minutes the man was killed in the spot the foreman took him from. After the foreman had his back turned, he commenced to take the pillar out again, and in doing so he lost his life.

No. 27.—Patrick Markey, platform-man, aged sixty years, was instantly killed by a fragment of car wheel from a runaway car, on the plane at Nesquehoning breaker, on the 15th day of September.

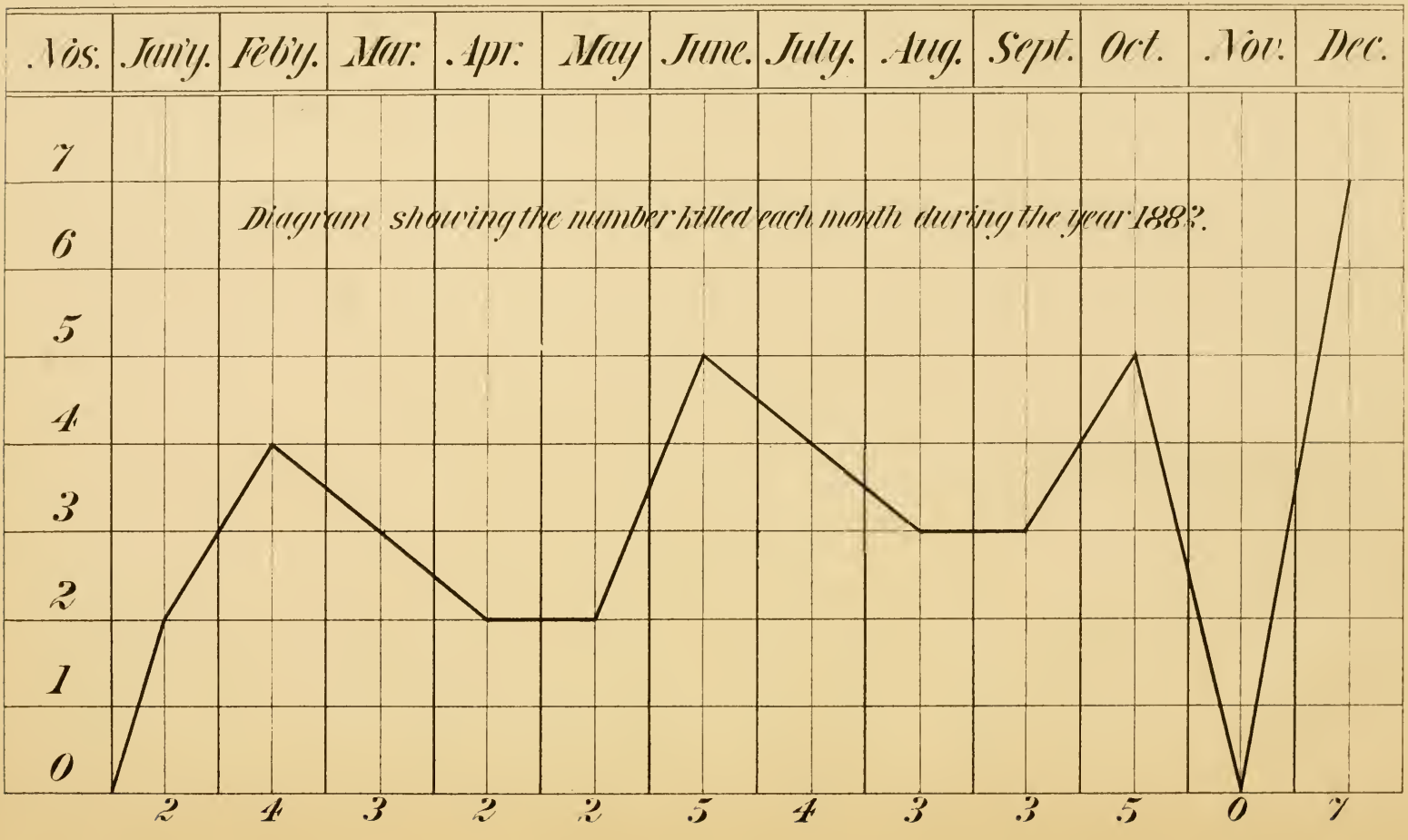
This accident was caused by the mistake of the top-man who, from some cause, failed to hook on the two bridle chains, and who failed also to notify the lever-man of his mistake until the car got over the apex; while in going over, the other chain broke, letting the car dash down the plane at a rapid rate, striking the stop block in rear of the dump, which broke the car into splinters, scattering coal, timber and iron in every direction. One of these pieces struck deceased on the head with results as stated.

This accident occurred where it was thought that the men were perfectly safe, but it seems that no safe place can be found in and about the coal mines. In my investigation of the cause of the accident, it took me quite a while to satisfy myself how the piece could have struck him, as it was impossible to see the place where the man stood from the dump. It seems that the fragment first struck the side-plates and then glanced off in another direction, coming in contact with the man's head. All the improvements I could ask here was a higher stopping block, which was put in. I should also note that during the last ten years, several runaways occurred on this plane, but nobody was ever hurt before. The verdict of the jury in this case was, "that Patrick Markey came to his death by being struck by a fragment of a car wheel from a 'runaway' on the plane at Nesquehoning breaker, L. C. & Nav. Co., and the said jurors exonerate said company and all their employés from any and all blame."

TABLE No. 8.—*A list of accidents resulting in death in the South district of Luzerne ending December*

DATE.	No. of accident.	Names of Persons Killed.	Occupation.	Age.	Widows.	Orphans.	Names of Collieries.
Jan. 3	1	Bernard Conlin,	Miner,	22	..	..	Mount Pleasant, No. 1,
5	2	John Point,	Miner,	50	..	..	Cranberry,
Feb. 4	3	John H. Williams,	Miner,	38	1	5	Spring Mountain, No. 4,
13	4	James O'Donnell,	Miner,	40	1	6	Lansford, No. 5,
20	5	Robert Potts,	Driver,	21	..	..	Oakdale, No. 1,
22	6	John Randah,	Laborer,	40	1	2	Upper Lehigh, No. 2,
March 7	7	Patrick Brislin,	Miner,	25	..	..	Ebervale, No. 6,
10	8	John Watkins,	Laborer,	..	..	..	Coleraine, No. 1,
30	9	George Mowery,	Driver,	19			Hollywood, No. 1,
April 11	10	Andrew Fencik,	Laborer,	26	1	1	Cross Creek, No. 2,
26	11	John Bony,	Breaker laborer,	21	..	..	Hazleton mine,
May 20	12	Thomas Eckles,	Miner,	40	..	..	Oakdale, No. 1,
22	13	Thomas Gockin,	Miner,	46	1	4	Council Ridge, No. 5,
June 1	14	George Riley,	Breaker laborer,	18		..	Latimer, No. 1,
12	15	Patrick Judge,	Miner,	65	1	1	Humboldt,
24	16	Andrew Solock,	Outside laborer,	23	1	1	Hollywood, No. 1, strippings,
28	17	Nichol Marino,	Outside laborer,	47	1	5	No. 6 stripping,
29	18	John Boyle,	Miner,	50	1	1	Yorktown,
July 6	19	George Morton,	Helper,	14	..	..	West Cross Creek,
8	20	Anthony Younkleman,	Laborer,	27	..	..	East Sugar Loaf, No. 5,
11	21	John McGill,	Laborer,	22	..	..	Council Ridge, No. 2,
20	22	James Cannon,	Miner,	50	1	4	Humboldt,
Aug. 10	23	Jacob Lukavitz,	Laborer,	37	1	3	Sandy Run,
23	24	Frank Cannon,	Miner,	46	1	7	Lansford, No. 4,
25	25	William Milsliski,	Miner,	25	..	..	Council Ridge, No. 5,
Sept. 14	26	William Ashman,	Miner,	26	1	2	Upper Lehigh, No. 1,
15	27	Patrick Markey,	Breaker laborer,	60	1	3	Nesquehoning breaker,
23	28	Edmund Uren,	Miner,	37	..	..	Mount Pleasant,
Oct. 2	29	John Goshen,	Laborer,	23		..	Cross Creek, No. 2,
5	30	Thomas Costello,	Miner,	40	1	6	Latimer, No. 2,
6	31	Daniel Brennan,	Miner,	34	1	7	Mount Pleasant,
11	32	Andrew McHugh,	Miner,	46	1	5	Latimer, No. 2,
24	33	Bernard Cull,	Miner,	50	..	..	Cranberry,
Dec. 4	34	Theodore Hill,	Laborer,	21	..	..	Coleraine, No. 1,
13	35	Patrick Boyle,	Laborer,	28	..	..	Yorktown, No. 6,
15	36	Michael Karac,	Laborer,	30	..	.	Stockton, No. 3,
17	37	Michael Cannon,	Miner,	40	1	5	Lansford, No. 4,
18	38	John Konador,	Slate-picker,	13	..	..	Oakdale, No. 2,
19	39	Robert Brunskill,	Fire-boss,	46	1	6	Laurel Hill,
27	40	Condy O'Donnell,	Laborer,	19	..	..	Highland, No. 2,
					19	74	

	1882.	1881.
Killed,	19	25
Fatally injured,	21	22
	40	47


Nos.
Jan'y.
Feb'y.
Mar.
Apr.
May
June.
July.
Aug.
Sept.
Oct.
Nov.
Dec.
7
6
5
4
3
2
1
0
Diagram showing the number killed each month during the year 1882.
2
4
3
2
2
5
4
3
3
5
0
7

and Carbon counties, Pennsylvania, with remarks on the cause of each, for the year 31, 1882.

Remarks on the Causes of Accidents.	Explosion of CH4 gas.	Falling of roof and coal.	Falling down shafts or slopes.	By mine cars.	Premature explosions.	On surface.	Totals.	No. of accident.
Fatally injured by mine cars while going in to work; died same day,				1			1	1
Fatally injured by fall of benches in breast; died the next day,		1					1	2
Instantly killed by fall of coal; widening piece of gangway for branch,		1					1	3
Instantly killed by falling down slope; for some unknown reason he walked right in,		1					1	4
Fatally injured on gangway by being crushed between cars and door; died the same day,				1			1	5
Fatally injured by fall of coal; died at Wilkes-Barre hospital, March 6,		1					1	6
Instantly killed by a fall of coal; deceased had only worked a few days in this place,		1					1	7
Fatally injured by timber falling on him from a car he was helping to unload,						1	1	8
Fatally injured while attempting to jump on a moving train of cars,				1			1	9
Instantly killed by a blast through pillar from party driving a cross-heading,					1		1	10
Fatally injured by cars at breaker; died on the 28th,						1	1	11
Killed by a fall of the poor-man,		1					1	12
Instantly killed by a fall of top coal,		1					1	13
Fatally injured by falling under cars near breaker; died the same day,						1	1	14
Fatally injured by fall of clod while eating dinner; died on the 15th,		1					1	15
Instantly killed by falling into chute on surface,						1	1	16
Instantly killed by fall of earth through gross carelessness,						1	1	17
Fatally injured by a fall of clod, and died on the 3d of July,		1					1	18
Fatally injured by falling under mine cars; died on 10th of same month,				1			1	19
Instantly killed by a fall of slate through the carelessness of the miners,		1					1	20
Fatally injured by piece of dividing slate; died on the 15th; the miner here is again at fault,		1					1	21
Was killed by a fall of slate; a slip coming in at face was the cause,		1					1	22
Was instantly killed by a small piece of top coal,		1					1	23
Killed by a fall of coal while drilling a hole to bring the coal down,		1					1	24
Instantly killed by a fall of coal,		1					1	25
Fatally injured by a fall of rock; died the same evening,		1					1	26
Instantly killed by a piece of broken wheel from runaway car on plane,						1	1	27
Fatally injured by a small piece of clod striking him on head; died the same evening,		1					1	28
Fatally injured by fall of coal, and died on Oct. 11,		1					1	29
Instantly killed by fall of coal in breast while trying to bar coal down,		1					1	30
Fatally injured by fall of clod; died on the 17th in the Pennsylvania hospital, Philadelphia,		1					1	31
Instantly killed by fall of coal while attempting to cross the breast just after a blast,		1					1	32
Fatally injured by fall of coal, generally called the benches; died on 27th,		1					1	33
Instantly killed by fall of coal while on gangway, coal breaking the collar above him,		1					1	34
Instantly killed by fall of clod near face of breast,		1					1	35
Killed by railroad cars; attempted to jump on them while in motion,						1	1	36
Fatally injured by fall of coal; died in about four hours, while being taken out,		1					1	37
Fatally injured by falling into screen; died the same day,						1	1	38
Fatally injured by explosion of gas; died the next day,	1						1	39
Fatally injured by mine cars; jammed between cars and platform,				1			1	40
	1	24	1	5	1	8	40	

RECAPITULATION.

	1881.	1882.		1881.	1882.
Explosion of carbureted hydrogen gas,	3	1	Miscellaneous, inside,	3	
Falls of coal, slate, and roof,	24	24	Miscellaneous, outside,	5	5
Falling into slopes,		1	By railroad cars on surface,		3
Mine cars inside,	11	5			
Premature blasts,	1	1		47	40

TABLE No. 9.—*A list of non-fatal accidents in the south district of Luzerne and ing Decem*

DATE.	No. of accident.	Names of Persons Injured.	Occupation.	Age.	Names of Collieries.
Jan. 6	1	Michael Wise,	Laborer,	27	East Crystal Ridge,
9	2	John Bavan,	Laborer,	18	Council Ridge,
14	3	Calwin Rhobsack,	Laborer,	20	Upper Lehigh,
18	4	John Reese,	Miner,	36	Treskow, No. 6,
23	5	John Medina,	Fireman,	..	East Sugar Loaf,
23	6	Matthew Elliot,	Miner,	..	East Sugar Loaf,
24	7	Nathan McNeal,	Slate picker,	16	Mount Pleasant,
25	8	Lewis Davies,	Miner,	..	East Sugar Loaf,
26	9	Milton Hoodmacher,	Driver,	..	Sandy Run,
28	10	Barney Mooney,	Laborer,	45	Laurel Hill,
28	11	Patrick Ferry,	Pump man,	18	Upper Lehigh, No. 4,
30	12	Patrick Boyce,	Miner,	..	Beaver Brook,
30	13	John Barney,	Laborer,	..	No. 6 Stripping,
30	14	Levi Schenck,	Laborer,	..	No. 6 Stripping,
30	15	Thomas McGehan,	Laborer,	62	Hazleton Mine,
Feb. 5	16	Dennis Boyle,	Miner,	45	Cranberry,
6	17	James Gallagher,	Miner,	.	Cross Creek, No. 2,
9	18	Thomas Sharp,	Miner,	65	Laurel Hill,
9	19	James Coyle,	Driver,	16	Spring Mountain,
13	20	Francis Gorman,	Laborer,	40	Sandy Run,
21	21	John Vanisgo,	Laborer,	23	Sugar Loaf,
23	22	John Penders,	Laborer,	..	Cross Creek, No. 3,
24	23	Patrick Cannon,	Driver,	..	Cross Creek, No. 1,
March 7	24	Samuel Hill,	Foot man,	19	Harleigh,
10	25	Peter Knath,	Miner,	30	East Sugar Loaf, No. 4,
13	26	John Galleghar,	Miner,	50	Harleigh,
14	27	John Bucko,	Laborer,	23	East Sugar Loaf,
14	28	Patrick Sommer,	Miner,	35	Milnesville,
21	29	Daniel Campbell,	Miner,	38	Highland, No. 2,
21	30	George Rhapson,	Miner,	45	Treskow,
27	31	Thomas Jones,	Miner,	35	East Sugar Loaf,
April 1	32	David I. Davies,	Miner,	26	Upper Lehigh,
1	33	Erasmus Snyder,	Laborer,	21	Upper Lehigh,
10	34	Miles Flynn,	Fireman,	24	Hazleton Mine,
10	35	John Evans,	Foot man,	16	Treskow, No. 6,
18	36	John McTaggart,	Miner,	37	Spring Mountain,
18	37	Charles Demasco,	Laborer,	25	Hollywood Stripping,
18	38	Henry Schall,	Miner,	40	Hazleton Mine,
19	39	Thomas Paisley,	Driver,	16	South Sugar Loaf,
20	40	John Kite,	Laborer,	19	Milnesville,
22	41	John Cannon,	Miner,	40	Ebervale, No. 1,
25	42	Charles McDavitt,	Miner,	40	Hazleton, No. 6,
25	43	John Grebe,	Laborer,	21	Treskow, No. 6,
25	44	Henry Steckles,	Laborer,	24	Upper Lehigh, No. 4,
25	45	John McHugh,	Miner,	24	Lansford, No. 5,
May 5	46	William McFadden,	Laborer,	50	Spring Mountain, No. 4,
6	47	John R. Llewellyn,	Miner,	38	Spring Mountain, No. 4,
25	48	John Ziegler,	Pump man,	48	Sugar Loaf,
25	49	James Gallagher,	Driver,	15	Nesquehouing,
June 6	50	James McBride,	Laborer,	22	Treskow, No. 2,
10	51	John Kimmel,	Laborer,	21	Treskow, No. 2,
15	52	Bernard Dinn,	Laborer,	28	Council Ridge,
15	53	William Rodgers,	Miner,	40	Mount Pleasant,

Carbon counties, Pennsylvania, with remarks on the cause of each for the year ender 31, 1882.

Remarks on Extent and Cause of Accidents.	Explosion of CH_4 gas.	Falls of roof and coal.	By mine cars.	Explosion of powder.	Premature blasts.	Miscellaneous inside.	Miscellaneous on surface.	Total.	No. of accident.
Ankle dislocated; struck by piece of timber on gangway,						1		1	1
Leg considerably bruised; struck by empty car that jumped track,			1					1	2
Kicked by a mule and thrown under car which passed over his leg,			1					1	3
Severely injured by collision of mine cars. Reese attempted to run a trip of cars unknown to driver, who met him while bringing in a trip of empty cars; driver saved himself by jumping off,			1					1	4
Slightly burned by escaping steam from a steam pipe,							1	1	5
Slightly burned by explosion of powder caused by spark from lamp,				1				1	6
Slightly injured by falling into pea coal screen while thawing the ice off with steam,							1	1	7
Leg slightly injured by a rush of coal in breast,		1						1	8
Seriously injured; squeezed between car and pillar,			1					1	9
Severely injured on foot by piece of timber falling on it,							1	1	10
Severely cut on leg; caught by a door while riding up slope,			1					1	11
Leg fractured by a fall of coal in breast,		1						1	12
Both men were severely injured by an explosion of a cartridge of dualin powder which they had put near the fire to thaw,				1				1	13
Severely injured by being struck by a car near breaker,							1	1	14
Severely injured by a fall of benches by going back too soon after a blast,		1						1	15
Right thigh fractured near hip, and otherwise seriously injured by a fall of coal,		1						1	16
Slightly burned by explosion of gas caused by his own carelessness,	1							1	17
Both legs fractured: he was looking at John Williams drilling a hole, and was caught by the fall of coal that killed Williams,		1						1	18
Foot fractured by a car while running it from breaker,							1	1	19
Shoulder dislocated by being struck by a car at bottom of slope,			1					1	20
Fell in breaker, injuring spine; was sent to Pennsylvania Hospital, Philadelphia,							1	1	21
Hip dislocated by mule falling and rolling on him,							1	1	22
Slightly injured by being jammed between cars,			1					1	23
Severely cut on knee by falling on coal in breast,						1		1	24
Slightly injured on body by piece of coal rolling and striking him,		1						1	25
Hand caught between a prop and lump of coal; two fingers had to be amputated,						1		1	26
Severely injured by fall of coal at face of gangway while timbering it,		1						1	27
Lungs seriously injured by a fall of slate; recovery doubtful,		1						1	28
Severely injured by a fall of coal in breast,		1						1	29
Seriously injured by a car on slope. Jones went to this place against positive instructions,			1					1	30
These two men were severely injured by a premature blast. Davis was badly burned on face and body; Snyder burned on face,					1			1	31
Arm fractured while riding up slope in a car,			1					1	32
Slightly injured by being struck by a piece of coal that rolled down slope,		1						1	33
Ankle bone fractured by a fall of coal,		1						1	34
Ankle badly bruised by a fall of clay,							1	1	35
Seriously injured; caught by a rush of coal in battery,		1						1	36
Leg fractured by falling under mine car,			1					1	37
Thigh fractured; caught between a car and a chute,			1					1	38
Considerably cut and bruised by premature blast; injuries not serious,					1			1	39
Leg fractured in two places and otherwise seriously injured by a fall of coal,			1					1	40
Leg fractured and otherwise seriously injured by a fall of coal,			1					1	41
Compound fracture of finger which had to be amputated; jammed by mine car,				1				1	42
Slightly burned by an explosion of gas,	1							1	43
Slightly injured by mine cars under breaker,							1	1	44
Seriously cut on head and otherwise injured by a runaway car on plane,			1					1	45
Foot badly crushed by being caught by a pump-rod,						1		1	46
Severely cut on leg by an empty car running over it,			1					1	47
Severely injured on back and head by fall of coal,		1						1	48
Leg fractured in two places by runaway car on slope; top man pushed car over without the rope,			1					1	49
Finger fractured by a fall of coal; had to be amputated,		1						1	50
Severely injured on hand and foot by a fall of coal,		1						1	51
								1	52
								1	53

TABLE No. 9.—

DATE.	No. of accident.	Names of Persons Injured.	Occupation.	Age.	Names of Collieries.
June 21	54	Thomas Shellhamer, . .	Laborer, ...	21	Hollywood, ...
21	55	Michael Josie, ...	Laborer, ...	.	Laurel Hill, ...
26	56	Edward Pugh, ...	Driver, ...		Nesquehoning, ...
July 1	57	John Baum, ...	Miner, ...	55	Treskow, No. 7, ...
7	58	Thomas Derby, ...	Miner, ...		Lansford, No. 7, ...
8	59	Vincent Wilson, ...	Miner, ...	33	Black Ridge, ...
11	60	John Harvey, ...	Miner, ...	45	Laurel Hill, ...
11	61	John Scobell, ...	Laborer, ...	. .	Laurel Hill, ...
11	62	John Missiowski, ...	Laborer, ...	.	Laurel Hill, ...
11	63	George Henry, ...	Miner, ...	. .	East Crystal Ridge, ...
11	64	Henry Koch, ...	Miner, ...	.	East Crystal Ridge, ...
11	65	Benjamin Lawrence,	Miner, ...	.	East Crystal Ridge, ...
11	66	Paul Petro, ...	Laborer, ...	28	Spring Mountain, ...
13	67	Condy O'Brien, ...	Laborer, ...	26	Treskow, ...
14	68	William M. Hale, ...	Driver, ...	14	Ebervale, ...
15	69	John Maloney, ...	Driver, ...	18	Milnesville, ...
18	70	John Kanaram, ...	Laborer, ...	21	Council Ridge, No. 5, ...
20	71	Andrew Myer, ...	Driver, ...	. .	Laurel Hill, ...
20	72	John Lynch, ...	Driver, ...	45	Hazleton Mine, ...
22	73	Joseph Goliat, ...	Laborer, ...	27	Upper Lehigh, ...
29	74	John O'Donnel, ...	Miner, ...	50	Harleigh, ...
29	75	John McElwee, ...	Miner, ...	38	Buck Mountain, ...
29	76	Hugh McGlynn, ...	Laborer, ...	. .	Buck Mountain, ...
Aug. 2	77	Con. Tammany, ...	Laborer, ...	19	Upper Lehigh, ...
2	78	James Riehle, ...	Miner, ...	23	Hazleton Mine, ...
4	79	Patrick McLoughlin, .	Miner, ...	. .	Hazleton Mine, ...
5	80	Lewis Weideubach, . . .	Slate-picker, . . .	12	Laurel Hill, ...
7	81	John Scanlan, ...	Miner, ...	46	Ebervale, ...
7	82	John McClellan, ...	Miner, ...	38	Latimer, ...
7	83	John Fitspatrick, ...	Laborer, ...	25	Latimer, ...
12	84	Patrick Bowen, ...	Miner, ...		Ebervale, ...
13	85	Andrew O'Donnel, . . .	Miner, ...	30	Council Ridge, ...
22	86	James Hall, ...	Driver, ...	24	Sandy Run, ...
25	87	Mike McMahon, ...	Laborer, ...	.	Laurel Hill, ...
31	88	Charles Danbert, . . .	Driver, ...	21	Upper Lehigh, ...
Sept. 1	89	John Inhiskey, ...	Laborer, ...	24	Cross Creek, No. 2, ...
2	90	Peter Boner, ...	Footman, ...	. .	Cross Creek, No. 5, ...
5	91	Isaac Henry, ...	Miner, ...	22	Yorktown, ...
15	92	Robert Farlton, ...	Miner, ...	65	Black Ridge, ...
21	93	Thomas Davis, ...	Laborer, ...	. .	Lansford, No. 4, ...
22	94	James Gallagher, ...	Spragger, ...	. .	Lansford, No. 4, ...
22	95	John Parry, ...	Miner, ...	. .	Gowen, ...
22	96	Patrick Boyce, ...	Miner, ...	. .	Ebervale, ...
22	97	Henry Koch, ...	Runner, ...	.	Cranberry, ...
22	98	William Gerlock, ...	Foreman, ...	48	Cranberry, ...
. . . . .	99	Peter Pryor, ...	Laborer, ...	24	Hazleton, No. 3, ...
Oct. 2	100	Gustav Johnson, ...	Miner, ...	. .	Haizeton, No. 6, ...
3	101	George Strunk, ...	Miner, ...	35	Harleigh, ...
11	102	Isaac Evans, ...	Miner, ...	. .	Yorktown, ...
18	103	James O'Donnel, ...	Miner, ...	57	Spring Mountain, ...
19	104	James Bryant, ...	Miner, ...	.	Laurel Hill, ...
25	105	Patrick Scanlan, ...	Miner, ...	40	Harleigh, ...
26	106	Patrick Harvey, ...	Driver, ...	. .	Cross Creek, No. 2, ...
26	107	James Cullen, ...	Miner, ...	. .	Nesquehoning, ...
26	108	John McCaffrey, ...	Miner, ...	. .	Nesquehoning, ...
26	109	Bernard Dempsey, . . .	Miner, ...	. .	Nesquehoning, ...
. . . . .	110	Anthony Kester, ...	Miner, ...	.	Cross Creek, No. 2, ...
30	111	John Molineaux, ...	Laborer, ...	. .	Cross Creek, No. 2, ...
30	112	Patrick Foster, ...	Miner, ...	45	Yorktown, ...
Nov. 2	113	Hugh Trimble, ...	Miner, ...	45	Highland, ...
5	114	William Casper, ...	Driver, ...	15	Ebervale, ...

Continued.

Remarks on Extent and Cause of Accident.	Explosion of CH_4 gas.	Falls of roof and coal.	By mine cars.	Explosion of powder.	Premature blasts.	Miscellaneous inside.	Miscellaneous on surface.	Total.	No of accident.
Slightly injured on head by being struck by a small piece of coal,		1						1	54
Severely cut on leg by a fall of coal,		1						1	55
Slightly injured by mine cars,			1					1	56
Seriously injured by premature blast,						1		1	57
Bruised about body and badly cut on knee by premature blast,						1		1	58
Seriously injured by a fall of coal while preparing to prop it,		1						1	59
These three men were slightly burned by an explosion of gas at the face of their gangway. It occurred through their own carelessness,	1							1	60
	1							1	61
	1							1	62
These three men were slightly burned by an explosion of gas while going into a breast that had been idle for about a month. The presence of gas was known to two of them, yet they failed to care for themselves,	1							1	63
	1							1	64
	1							1	65
Ankle and foot badly crushed by cars at breaker,							1	1	66
Leg fractured by a piece of coal that he was splitting rolling on it,		1						1	67
Arm crushed by mine car. It became necessary to amputate it,			1					1	68
Spine injured by falling from a trestling about twelve feet high,							1	1	69
Arm fractured by a fall of coal while loading a car,		1						1	70
Badly squeezed by mine cars; attempted to couple them while in motion,			1					1	71
Severely cut on leg by a fall of slate while barring it down,		1						1	72
Arm fractured by cars at breaker,							1	1	73
Injured on leg by being struck by car on a plane inside,						1		1	74
These two men were seriously injured by a fall of coal. They had just fired a blast, and, by the testimony, went right back,		1						1	75
		1						1	76
Injured on hip and leg by a fall of coal,		1						1	77
Severely cut on hand by a piece of coal while barring it down,		1						1	78
Seriously injured by falling under a mine car he was sitting on,			1					1	79
Seriously injured by an elevator that he was trying to ride on,							1	1	80
Leg fractured by a fall of coal while sitting down in another man's breast,		1						1	81
Both were seriously injured by a fall of coal. They were engaged in robbing pillars at gangway, and with a little care could have done the work with safety,		1						1	82
		1						1	83
Seriously injured by a fall of coal,		1						1	84
Injured by a fall of coal at face of gangway,		1						1	85
Leg fractured while helping to put car on track near foot of slope,						1		1	86
Severely injured by being caught between cars at breaker,							1	1	87
Arm fractured by being struck by mine car while helping to put it on track,			1					1	88
Slightly injured by a fall of coal,		1						1	89
Seriously injured by a runaway car on slope. Was riding on a car down slope against the orders of the officials,			1					1	90
Severely injured by premature blast,					1			1	91
Injured by a fall of clod which he had neglected to take down,		1						1	92
Severe injuries on leg caused by cars running over it at breaker,							1	1	93
Slightly injured by being jammed by mine cars,			1					1	94
Leg fractured by a fall of coal while in the act of securing it,		1						1	95
Knee dislocated and severely cut on the head by a fall of coal,		1						1	96
Badly crushed by falling under mine cars,			1					1	97
End of one finger taken off while examining a jig,							1	1	98
Collar bone fractured and also injured inwardly by being caught between the cars and collars on gangway. Instead of sitting in the car he stood up and was caught,			1					1	99
Leg fractured by piece of coal rolling on it in breast,		1						1	100
Slightly injured by a rush of coal in breast,		1						1	101
Hip sprained by a fall of coal,		1						1	102
Ankle fractured by a piece of coal rolling on it,		1						1	103
Slightly cut about body by pieces of coal from a premature blast,					1			1	104
Severely bruised about body by a rush of coal in breast,		1						1	105
Seriously injured by falling under mine cars,			1					1	106
These three men were seriously injured by a premature blast. They were engaged in blasting rock at battery, and were at this time tamping a hole, which, from some unknown cause, exploded,					1			1	107
					1			1	108
					1			1	109
While going to work slipped and rolled down the slope about eighty feet; injuries not serious,						1		1	110
Injured by mine cars at breaker,							1	1	111
Hip severely injured by a fall of clod near face of breast,		1						1	112
Leg fractured by piece of coal falling from pillar,		1						1	113
Slightly injured by being struck by mine car on plane,			1					1	114

TABLE No. 9—

DATE.	No. of accident.	Names of Persons Injured.	Occupation.	Age.	Names of Collieries.
Nov. 6	115	John Arba,	Blacksmith,		Lansford, No. 6,
8	116	James Floyd,	Miner,	40	Stockton, No. 3,
9	117	Thomas M. Geney,	Miner,	40	Spring Mountain, No. 5,
14	118	Thomas Hughes,	Miner,		Ebervale, No. 2,
22	119	Thomas Donnelly,	Miner,	55	Yorktown, No. 5,
22	120	Dominic Dougherty,	Miner,	40	Mt. Pleasant, No. 2,
22	121	Simon Glace,	Carpenter,	50	Mt. Pleasant, No. 2,
24	122	Herman Boetcher,	Miner,	40	East Sugar Loaf,
Dec. 1	123	John Jackson,	Laborer,		Hollywood,
2	124	Grant Elliot,	Laborer,		Hollywood,
13	125	Samuel Carlin,	Miner,	45	Hazleton, No. 6,
16	126	William Kisthardt,	Miner,		Sugar Loaf,
19	127	Frederick Reed,	Miner,		Cranberry,
19	128	Thomas Phillips,	Laborer,		Cranberry,
21	129	Stephen Rubozick,	Laborer,	32	Council Ridge, No. 5,
21	130	Cormick Gallagher,	Miner,	55	Tresckow, No. 6,
22	131	John Sharp, junior,	Driver,	18	Tresckow, No. 6,
26	132	Frank Maloy,	Helper,	16	Lattimer, No. 2,
26	133	H. McAndrew,	Roadman,		Buck Mountain,
28	134	John McCarson,	Oiler,		Ebervale,
28	135	John W. Davis,	Miner,		Cross Creek, No. 3,
28	136	John Trainor,	Laborer,	28	

Continued.

Remarks on Extent and Cause of Accident.	Explosion of CH_4 gas.	Falls of roof and coal.	By mine cars.	Explosion of powder.	Premature blast.	Miscellaneous inside.	Miscellaneous on surface.	Total.	No. of accident.
Seriously injured by being struck by a derrick pole on dirt bank,							1	1	115
Slightly injured by a fall of coal,		1						1	116
Seriously injured about body by a fall of coal,		1						1	117
Severely injured by a fall of coal,		1						1	118
Seriously injured by a fall of coal,		1						1	119
Foot badly bruised by a fall of clod,		1						1	120
Leg fractured by being caught by jig belt,							1	1	121
Slightly injured by a fall of coal,		1						1	122
Thumb cut off by a piece of coal in breaker,							1	1	123
Slightly injured by falling into machinery at dirt plane,							1	1	124
Severely cut on head by a fall of coal,		1						1	125
Severely injured on shoulders and hip by a fall of coal,		1						1	126
Both men were severely injured by a fall of slate near the face of the gangway; they had neglected to take the slate down,		1						1	127
		1						1	128
Leg fractured by a fall of coal at face of breast,		1						1	129
Severely bruised by a fall of coal near face of breast,		1						1	130
Foot mashed by a fall of coal near face of breast; it became necessary to have it amputated. The miner in breast was responsible for this accident, as the clod that fell should have been propped or taken down,		1						1	131
Collar bone fractured; jumping off locomotive while in motion,			1					1	132
Leg fractured by a fragment of wheel from a runaway car on plane outside,							1	1	133
Arm fractured while riding up the slope,			1					1	134
Ankle bruised by fall of slate at face of gangway,		1						1	135
Arm fractured and severely cut on head by a fall of coal,		1						1	136
	8	58	28	3	10	7	22	136	

TABLE No. 10.—*Number of each class of employés at each Colliery during the year 1882.*

A. PARDEE & CO., HAZLETON.

NAME AND NUMBER OF COLLIERY.	NUMBER OF EMPLOYEES INSIDE.											NUMBER OF EMPLOYEES OUTSIDE.										Grand total inside and outside.
	Mine bosses.	Engineers and pumpmen.	Miners.	Miners' laborers.	Men timbering.	Road and repairmen.	Drivers and car runners.	Men at top and bottom of slopes or planes.	Oilers and door-boys.	Men employed at other work, if any.	Total inside.	Breaker and screen bosses.	Hoisting and pumping engineers.	Firemen.	Machinists.	Carpenters and blacksmiths.	Breaker men in all capacities.	Drivers.	Slate pickers.	Teamsters, choppers, stable bosses, &c.	Superintendents, ass't superintendents, clerks, and book-keepers.	Total outside.	
Hazleton Mine,	1	1	63	43		6	10	3	4		136	2	4	4		4	34		55			103	234
Laurel Hill, Nos. 2 and 7,	2		72	32		7	14	3	5	1	136	2	6	6		8	38		68	1		129	265
Hazleton, No. 6,	1		81	24		3	8	1	4		122	2	1	1		3	21		58			86	208
Hazleton, No. 3,	1		44	17		4	6	1	3		77	2	8	3		3	21		38			70	147
Cranberry,	2		95	40		7	13	3	5		165	2	2	2		4	24		47	2		83	248
East Crystal Ridge,	1		42	6		1	7	3	3		63	2	2	2		3	16		29			54	117
Sugar Loaf, Nos. 1 and 2,	1		41	27		4	6	2	1	1	83	2	6	6		4	26		28	1		73	156
South Sugar Loaf,	1		6	6		4		1			17	2	2	2		3	16		29			54	71
Mechanics, &c., doing general work about all the collieries,															13	20				36	8	77	77
	10	1	444	195		36	64	17	28	2	794	16	26	26	13	52	196		352	40	8	729	1,523

COXE BROS. & CO., DRIFTON.

No. 1 Drifton,	1	11	101	83	16	18	29	7	3	24	293	3	2	4	6	9	28	3	85	9	14	163	456
No. 2 Drifton,	2	3	100	77	23	19	16	6	18	3	267	3	5	4		13	26		90	13		154	421
No. 3 Drifton,	1	1	17	14	7	4	6	2	3	1	56	2	1	3		3	4		29	3		45	101
Gowen,	1		56	39	9	7	7	7	8	12	146	2	5	3	1	12	17	1	35	4		80	226
*Derringer,																							
*Tomhicken,																							363
*Beaver Meadow,																							
	5	15	274	213	55	48	58	22	32	40	762	10	13	14	7	37	75	4	239	29		442	1,567

*Men employed inside and outside in these three places. No coal shipped during 1882.

LINDERMAN, SKEER & CO., EAST SUGAR LOAF.

West No. 1, Stockton,	1	2	42	17	.	1	4	3	2	1	73	2	2	2	. .	2	24	. . .	23	.	. . .	55	128
No. 2, Stockton,	1	3	21	15	11	5	5	6	2	. .	69	1	2	4	.	3	20	1	28	. .	. .	59	123
No. 3, Stockton,	2	3	53	27	3	5	11	11	5		120	2	2	2		3	23		19			51	171
No. 5, Stockton,	2	5	75	46	3	4	14	6	4	7	166	3	4	4	4	4	31	3	42	6	5	106	272
	6	13	191	105	17	15	34	26	13	8	428	8	10	12	4	12	98	4	112	6	5	271	699

LEHIGH COAL AND NAVIGATION COMPANY.

No. 3, Nesquehoning,	6	5	62	37	17	4	23	12	16		182	7	3	2	3	5	46	9	38	2	. .	115	297
No. 4, Lansford,	4	5	44	59	27	6	21	6	10	. .	182	3	5	7	. . .	3	36	6	63	2	.	125	307
No. 5, Lansford,	2	5	34	36	21	7	21	10	13	. .	149	4	3	2	. .	2	31	7	32	3	. .	84	233
No. 6, Lansford,	2	4	49	38	20	3	14	3	3	. . .	136	3	2	2	. .	4	24	10	30	3	. .	78	214
*No. 9, Lansford,	2	. .	22		57	.	7		2	.	90	1	1	1		1	8	5		7		24	114
Screen building,	.	. .								. .		3	2	4	4	. .	54		34	. .	10	111	111
	16	19	211	170	142	20	86	31	44		739	21	16	18	7	15	199	37	197	17	10	537	1 276

G. B. MARKLE & CO., JEDDO.

Oak Dale, No. 1,	1	3	88	14	. . .	11	15	. .	7	. .	139	2	1	4	2	3	24	3	33	2	14	93	232
Oak Dale, No. 2,	1	2	86	9	. . .	7	16	. .	8	. .	129	2	1	4	2	3	24	3	36	2	9	86	215
Highland, No. 1,	1	5	88	17	. .	7	13	.	5	. .	136	2	1	2	2	3	28	3	46	2	9	98	234
Highland, No. 2,	1	3	94	17	.	3	14	.	4	.	136	2	1	2	2	3	25	3	49	2	9	98	234
	4	13	356	57	.	28	58	.	24	.	540	8	4	12	8	12	101	12	169	8	41	375	915

UPPER LEHIGH COAL COMPANY, UPPER LEHIGH.

No. 1,	1	1	10	14	. .	2	6	4	4														
No. 2,	1	3	32	32	.	3	7	4	9		175	4	6	5	3	7	34	3	41	6	8	117	292
No. 5,	1	1	20	11	.	1	3	3	2														
No. 4,	1	1	59	58	.	2	10	4	12		147	4	4	3	1	4	29	3	41	3	15	107	254
	4	6	121	115	.	8	26	15	27	.	322	8	10	8	4	11	63	6	82	9	23	224	546

* No coal shipped during 1882.

TABLE No. 10 –*Continued.*

J. LEISENRING & CO., COUNCIL RIDGE.

NAME AND NUMBER OF COLLIERY.	NUMBER OF EMPLOYEES INSIDE.											NUMBER OF EMPLOYEES OUTSIDE.											Grand total, inside and outside.
	Mine bosses.	Engineers and pumpmen.	Miners.	Miners' laborers.	Men timbering.	Road and repairmen.	Drivers and car-runners.	Men at top and bottom of slopes or planes.	Oilers and door-boys.	Men employed at other work, if any.	Total inside.	Breaker and screen bosses.	Hoisting and pumping engineers.	Firemen.	Machinists.	Carpenters and blacksmiths.	Breaker men in all capacities.	Drivers.	Slate-pickers.	Teamsters, choppers, stable bosses, &c.	Superintendents, asst. supts., clerks, and book-keepers.	Total outside.	
No. 2,	1	5	95	76	.	15	30	8	12	2	244	2	1	7	1	9	46	4	45	4	5	124	368
No. 5,	1	4	71	64	9	10	18	5	10	3	195	2	1	7	. . .	5	22	2	57	5	4	105	300
	2	9	166	140	9	25	48	13	22	5	439	4	2	14	1	14	68	6	102	9	9	229	668

EBERVALE COAL COMPANY, EBERVALE.

No. 1,	. . .	2	44	6	3	1	11	4	1	}													
No. 2,	1	2	31	14	2	2	7	2	4		137	1	3	7	2	10	40	3	55	8	4	133	270
No. 3,	. .	. .	6	2	2	1	1	2		}													
No. 5,	1	2	23	1	. . .	1	3	2	1														
No. 6,	. .	. . .	34	. .	. . .	1	3	2	1	}	79	1	2	3	2	3	25	3	44	8	. . .	91	170
	2	6	128	23	7	6	25	12	7	. .	216	2	5	10	4	13	65	6	99	16	4	224	440

J. C. HAYDON & CO., JEANSVILLE.

Nos. 4 and 7,	2	2	62	45	1	1	27	6	8	9	163	4	4	6	1	6	15	5	45	2	4	102	265
Nos. 5 and 1,	2	3	50	50	1	1	17	3	4	6	117	4	5	6	2	5	24	3	36	9	1	93	210
	4	5	112	75	2	2	44	9	12	15	280	8	9	12	3	11	39	8	81	11	5	195	475

G. H. MYERS & CO., YORKTOWN.

No. 5,	1	2	39	29	2	3	24	4	2	.	106	4	4	8	1	8	8	6	31	1	4	75	181
No. 6,	2	2	84	11	1	3	18	11	3	. .	135	4	3	5	. .	7	7	5	36	2	4	73	208
	3	4	123	40	3	6	42	15	5	. .	241	8	7	13	1	15	15	11	67	3	8	148	389

STOUT COAL COMPANY, MILNESVILLE.

No. 5,	1	4	15	10		2	5	3	. . .		40	2	2	2		3	40	1	17	. .	3	70	110
No. 7,		2	36	15	8	3	9	4	3	2	82	2	2	2	1	4	32	5	32	2		82	164
	1	6	51	25	8	5	14	7	3	2	122	4	4	4	1	7	72	6	49	2	3	152	274

PARDEE BROS. & CO., LATTIMER.

No. 1,	1	2	26	6	6	3	8	3	3	10	68	2	1	2	. .	3	29	4	75	6	7	129	197
No. 2,	1	2	67	7	18	3	15	3	6	17	146	2	1	2	. .	4	21	4	68		. . .	102	248
	2	4	93	13	24	6	23	6	9	27	214	4	2	4	. .	7	50	8	143	6	7	231	445

PARDEE SONS & CO., MOUNT PLEASANT.

No. 1,	1	. . .	44	10		2	8	3	3	. .													
No. 2,	1	. . .	20	19	2	6	8	3	4	. .													
No. 4,	. .	. . .	23	13	2	2	4	1	2	. .	237	3	12	8	. .	9	57	1	80	7	3	180	417
No. 5,	1	. .	27	17	3	2	4	1	1														
	3	.	114	59	7	12	24	8	10	.	237	3	12	8	.	9	57	1	80	7	3	180	417

MISCELLANEOUS COMPANIES.

Hollywood, C. Pardee & Co.,	1	.	21	8	. .	2	12		2	43	89	2	3	4	. .	10	40	4	80	6	2	151	240
Sandy Run, M. S. Kemmerer & Co.,	1	8	54	68	. . .	7	15	8	14	3	178	3	4	4	1	9	24	2	77	13	7	144	322
Humboldt, Linderman, Skeer & Co.,	1	2	31	37	2	5	12	3	2	. .	95	2	3	4	. . .	4	14	1	26	4	5	63	158
Black Ridge, Black Ridge Coal Co.,	1	. .	91	14		3	9	6	6	.	130	2	2	2	. .	3	8	2	70	3	2	94	224
Beaver Brook, C. M. Dodson & Co.,	1	1	28	42		2	8	7	1	2	95	2	5	5	. . .	7	19	5	30	3	4	80	175
Treseckow, E. B. Leisenring,	2	1	72	32	2	2	17	6	3	13	150	3	6	3	.	7	34	3	66	2	23	147	297
Buck Mountain Coal Company,	1	6	109	30	1	4	20	7	2	2	182	2	8	6	1	12	32	20	51	11	5	148	330

TABLE No. 10—*Continued.*

MISCELLANEOUS COMPANIES—*Continued.*

NAME AND NUMBER OF COLLIERY.	NUMBER OF EMPLOYEES INSIDE.											NUMBER OF EMPLOYEES OUTSIDE.											Grand totals, inside and out.
	Mine bosses.	Engineers and pumpmen.	Miners.	Miners' laborers.	Men timbering.	Road and repairmen.	Drivers and car runners.	Men at top and bottom of slopes or planes.	Oilers and door-boys.	Men employed at other work, if any.	Total inside.	Breaker and screen bosses.	Hoisting and pumpling engineers.	Firemen.	Machinists.	Carpenters and blacksmiths.	Breaker men in all capacities.	Drivers.	Slate pickers.	Teamsters, choppers, stable bosses, &c.	Superintendents, asst. supts., clerks, and book-keepers.	Total outside.	
Coleraine, W. T. Carter & Co.,	2	15	62	76	6	8	26	18	7	4	224	4	6	7	1	8	35	11	75	3	6	156	380
Harleigh, T. S. McNair & Co.,	1		70	51	2	3	9	1	5	15	157	3	5	4		8	58	4	35	5	3	125	282
Pond Creek, M. S. Kemmerer & Co.,*	. . .	.	2	10	.	. .			.		12			2	4	3	. .			. .		9	21
	11	33	540	368	13	36	128	56	45	82	1,312	23	42	41	7	71	264	52	510	50	57	1,117	2,429

RECAPITULATION.

A. Pardee & Co.,	10	1	444	195	.	36	64	17	28	2	794	16	26	26	13	52	196	. . .	352	40	8	729	1,523
Coxe Brothers & Co.,	5	15	274	213	55	48	58	22	32	40	762	10	13	14	7	37	75	4	239	29	377	805	†1,567
Linderman, Skeer & Co.,	6	13	191	105	17	15	34	26	13	8	428	8	10	12	4	12	98	4	112	6	5	271	699
Lehigh Coal and Navigat'n Company	16	19	211	170	142	20	86	31	41	.	739	21	16	18	7	15	199	37	197	17	10	537	‡1 276
G. B. Markle & Co., . .	4	13	356	57	. .	28	58		24		540	8	4	12	8	12	101	12	169	8	41	375	915
Upper Lehigh Coal Company, . . .	4	6	121	115	.	8	26	15	27		322	8	10	8	4	11	63	6	82	9	23	224	546
J. Leisenring & Co.,	2	9	166	140	9	25	48	13	22	5	439	4	2	14	1	14	68	6	132	9	9	229	665
Ebervale Coal Company,	2	6	128	23	7	6	25	12	7		216	2	5	10	4	13	65	6	99	16	4	224	440
I. C. Haydon & Co.,	4	5	112	75	2	44	9	12	15	2	280	8	9	12	3	11	49	8	81	9	5	195	475
G. H. Myers & Co.,	3	4	123	40	3	6	42	15	5		241	8	7	13	1	15	15	11	67	3	8	148	389
Stout Coal Company,	1	6	51	25	8	5	14	7	3	2	122	4	4	4	1	7	72	6	49	2	3	152	274
Pardee Brothers & Co.,	2	4	93	13	24	6	23	6	9	27	214	4	2	4	. .	7	50	8	143	6	7	231	445
Pardee Sons & Co.,	3		114	59	7	12	24	8	10		237	3	12	8		9	57	1	80	7	3	180	417
Miscellaneous companies,	11	33	540	368	13	36	128	56	45	82	1,312	23	42	41	7	71	264	52	510	50	57	1,117	2,429
Men engaged at stripping or uncovering the coal at different places,	. . .	.	.	.	.	.	.	. .	. .	. .		. .	.	. .	. .	.	.	.	. .	. .	.	235	235
	73	134	2,928	1,598	287	295	639	240	284	168	6,646	127	162	196	60	286	1 370	161	2,282	213	560	5,652	12,298

* Idle during 1882.

† Out of this number 363 were not producing coal.

‡ Out of this number 114 were not producing coal.

TABLE No. 11.—*Gives the total number of tons of coal mined in each colliery, number of days worked, ratio of coal mined per day, number of employés, ratio of coal mined per employé, number of persons killed and injured, ratio of coal mined per person killed and per person injured, ratio of persons employed per fatal and non-fatal accidents, number of kegs of powder used, number of tons mined per keg, &c., for the year 1882.*

A. PARDEE & CO.

Names and Number of Collieries.	Total production of each colliery for the year 1882 in tons.	Number of days worked.	Ratio of coal mined per day in tons.	Number of employees.	Ratio of coal mined per employee.	Number of fatal accidents.	Ratio of coal mined per fatal accident.	Number of non-fatal accidents.	Ratio of coal mined per non-fatal accidents.	Ratio of persons employed per fatal accident.	Ratio of persons employed per non-fatal accident.	Number of kegs of powder used.	Ratio of coal mined per keg used in tons.	Number of horses and mules inside and outside of mines.
Hazleton Mine,	92 106	226.2	407.18	234	393.61	1	92,106	6	15 351	234	39	1,299	70.9	36
Laurel Hill,	91,556	236.5	387.12	265	345.5	1	91,556	10	91.556	265	26.5	1,450	63.14	33
No. 3,	57,081	241.4	236 45	147	388	. . .		1	57 081	. . .	147	456	125.17	20
No. 6,	156.237	221.2	706.31	208	751	1	156 237	5	31.247	208	41.6	2 712	57.6	15
Cranberry,	121,888	231	527.65	248	491.48	2	60,944	5	24 377	124	62	2.886	42.23	24
East Crystal Ridge,	50.088	194.5	288.37	117	479 21	. . . .	.	4	14 022	. . . .	29.25	1,016	55.2	12
Sugar Loaf,	44 252	183.5	241.15	156	283 66	. . .	. . .	3	14.750	. . .	52	346	127.9	20
South Sugar Loaf,	54 519	199.5	273.28	71	767.87	. . . .	. . .	1	54 519	. . . .	71	984	55.4	15
				†77										35
	673,727	*216.7	*3,107	1,523	442.35	5	134,744	35	19,249	304.6	44.79	11,149	60.43	210

COXE BROS. & CO.

No. 1, Drifton,	223 929	253	885.10	456	491.07	. .	. . .	2	111,964	. . .	228	4,971	45	42
No. 2, Drifton,	237.998	254.5	935.16	421	565.31	2	118,999	6	39,666	210.5	70.16	1,430	56.9	41
No. 3, Drifton,	30 373	172.5	176.07	101	300.72	.	.	2	15 186	. . . .	50.5	460	66	9
Gowen,	55 229	193.5	285.4	226	244 37	1	55 229	1	55,229	226	226	1,471	37.5	15
	547,529	*218.3	*2 508.14	1,204	454.75	3	182,509.6	11	49,775.3	401.3	109 45	11,082	49.4	107

LINDERMAN, SKEER & CO.

No. 1,	62 363	159	392	128	487.2	. .	. . . .	1	62 363	. . . . .	128	1,°14	47.4	6
No. 2,	64 606	241	268	128	504.7	.		2	32.303	. . . .	64	1,179	54.8	11
No. 3,	83 851	228	363	171	490.3	1	83 851	2	41.925	171	85.5	1.736	48.3	23
No. 5,	131,027	236	555	272	481.7	1	131,027	3	43 676	272	90.6	2,302	56.9	24
	341,847	*216 5	*1 578.9	699	489	2	170,923.5	8	42,730.8	349.5	87 37	6,531	52.3	64

† Mechanics doing general work.

TABLE No. 11.—*Continued.*

LEHIGH COAL AND NAVIGATION COMPANY.

NAMES AND NUMBER OF COLLIERIES.	Total production of each colliery for the year 1882 in tons.	Number days worked.	Ratio of coal mined per day in tons.	Number of employees.	Ratio of coal mined per employee.	Number of fatal accidents.	Ratio of coal mined per fatal accident.	Number of non-fatal accidents.	Ratio of coal mined per non-fatal accident.	Ratio of persons employed per fatal accident.	Ratio of persons employed per non-fatal accident.	Number of kegs powder used.	Ratio of coal mined per keg used, in tons.	Number of horses and mules inside and outside of mines.
No. 3,	123,216	242	509	297	414.8	1	123,216	5	24,643	297	59 4	1,380	95.8	50
No. 4,	136,297	221	616.7	307	441	2	68,148	2	68,148	153	153	1,080	126	46
No. 5,	76,330	198	385 5	233	327.6	1	76,330	2	35,655	232	116	600	127	37
No. 6,	83,346	236	353	214	389.1	. . .	. .	1	83,346	. .	214	780	106.8	31
No. 9, no coal shipped.														
Screen building, Hauto,		. . .	.	111										
	419,189	*224.25	*186.9	1,162	360.7	4	104,797.25	10	41,989	290.5	116.2	3,840	109	164

G. B. MARKLE & CO., JEDDO.

No. 1, Oak Dale,	117,205	228	565	213	550.25	2	58,602	1	117 205	106.5	213	1,843	63 6	38
No. 2, Oak Dale,	126 600	224	560	202	626.73	1	126,600	1	126,600	202	224	2,058	61.5	38
No. 1, Highland,	104 358	206	506.5	221	472.2	. . .	. .	. . .	. .	. .	. .	2,365	44.1	37
No. 2, Highland,	124,472	205	607	222	506.6	1	124,472	. .	. .	222	. . . .	2 286	54.4	37
				*57										
	472,635	*215.75	*2 190.6	915	516.5	4	118,158.75	2	236,317.5	228.75	457.5	8,552	55 26	120

UPPER LEHIGH COAL COMPANY.

No. 1, Upper Lehigh,	198.579	221	898.54	292	680	2	99,289	4	49.644.7	146	73	2,961	67.06	48
No. 4, Upper Lehigh,	166,601	234	716	254	697		. .	4	55.533.6	. . .	79.66	3,172	52.52	39
	365,180	*227.5	* 1,619.2	546	669	2	182,590	8	52,168	265	75.85	6,133	59.54	87

J. LEISENRING & CO., COUNCIL RIDGE.

No. 2,	176,795	256	690 6	368	480.4	1	176,795	3	58 931	368	122.6	3,529	50	42
No. 5,	160,632	231	695 3	300	535.4	2	80,316	2	80,316	150	150	2,893	55.5	33
	337,427	*243.5	*1,385.3	668	505.1	3	112,475	5	67,485.4	222 6	133.6	6,422	52.5	80

EBERVALE COAL COMPANY, EBERVALE.

No. 1,	147.105	222	662.6	270	544.8	. . . .	. .	4	36,776	. . .	67.5	2,033	72.3	33
No. 3,	110.278	206	535.3	140	648.7	1	110,278	4	27,569	170	42.5	1,778	62	17
	257.383	*214	*1,207.7	440	584.9	1	257,388	8	32,173	440	55.5	3.811	67.5	50

I. C. HAYDEN & CO., JEANSVILLE.

No. 4,	119,568	231	517.6	265	451.2	. .		3	39,856	.	88.3	1.380	86.6	34
No. 7,	122,811	231	531.6	210	584.8	1	122,811	4	30,703	210	70	3,127	39.27	33
	242,379	*231	*1,049.3	475	510.27	1	242 379	7	34,625.6	475	79.15	4,507	53.77	67

G. H. MYERS & CO., YORKTOWN.

No. 5,	86,400	239	361.5	181	477	1	86,400	2	42,000	181	90.5	1,500	57 6	19
No. 6,	98,674	247	474.4	208	474.4	1	98,674	2	49,337	208	104	1,921	51.3	23
	185,074	*243	*761.6	389	475.7	2	92,537	4	46,268.5	194.5	97.5	3,421	54.9	42

STOUT COAL COMPANY, MILNESVILLE.

No. 5,	39,750	145	274	108	368	. .	. . . .	1	39,750	. . . . .	10.8	563	70.6	8
No. 7,	81,043	203	399	166	488	.	. . . .	2	40,521.5	. . .	83	406	199.6	28
	120,793	*174	*694.2	274	441.5	. .	. . .	3	40,264 5	. . . . .	91.3	969	124.6	36

TABLE No. 11—*Continued.*

PARDEE BROS. & CO., LATIMER.

NAMES AND NUMBER OF COLLIERIES.	Total production of each colliery for the year 1881, in tons	Number of days worked.	Ratio of coal mined per day, in tons.	Number of employees.	Ratio of coal mined per employee.	Number of fatal accidents.	Ratio of coal mined per fatal accident.	Number of non-fatal accidents.	Ratio of coal mined per non-fatal accident.	Ratio of persons employed per fatal accident.	Ratio of persons employed per non-fatal accident.	Number of kegs of powder used.	Ratio of coal mined per keg used, in tons.	Number of horses and mules inside and outside of mines.
No. 1,	112,179	239	469.3	197	569.4	1	112,179	2	56,089.5	197	98.5	970	115.6	29
No. 2,	126,853	241	526.3	248	511.5	2	63,426.5	1	126,853	124	248	970	130.7	29
	239,032	*235	*1,017	445	537.15	3	79,677	3	79,677.3	148.3	148.3	1,940	123.2	58

MISCELLANEOUS COMPANIES.

Hollywood, C. Pardee & Co.,	125,841	226	556.8	240	524 3	2	62,920	4	31,460	120	120	1,669	65.2	38
Mt. Pleasant, Pardee Sons & Co.,	143,373	218	657.6	417	343.8	3	47.791	4	35,843	139	208.5	3,021	47.4	51
Sandy Run, M. S. Kemmerer & Co.,	181 759	237	766.9	322	564.4	1	181,759	3	60,586	322	107.3	3,420	53.1	59
Humboldt, Linderman, Skeer & Co.,	87,730	231	379 7	158	379.7	2	43,865			79		1,915	45.1	23
Black Ridge, Black Ridge Coal Company,	62.694	201.5	316	224	284.3			2	31 847		112	1,900	33.5	20
Beaver Brook, C. M. Dodson & Co.,	99,367	215	462	175	574 3			1	99.367		173	1,252	79.3	24
Tresckow, E. B. Leisenring,	135,605	200	678	297	456.7			10	13,560		29.7	2.663	50.9	32
Buck Mountain, B. M. C. Co.,	108,906	198	550	330	330			3	36,302		110	2,570	42.4	53
Coleraine, W. T. Carter & Co.,	153.360	225	681	380	403.6	2	76,630			190		2 430	63	41
Harleigh, T. S. McNair & Co.,	83,667	202 7	437.4	282	314 4			5	17,733		56.4	2 650	33 4	26
	1,158 302	*215 4	*548 5	2,825	410 3	10	115,830	32	35 834	282	88.2	23,523	49.2	370

*Average.

RECAPITULATION.

A. Pardee & Co.,	673,727	*216.7	3,107	1 523	442.35	5	134 744	35	19.249	304.6	44 79	11,149	60.43	210
Coxe Bros. & Co.,	547,529	*218.3	2,508.14	1.204	454.75	3	182.509.6	11	49,775.3	401.3	109.45	11 082	49.4	107
Linderman, Skeer & Co.,	341,847	*216.5	1,578.9	699	489	2	170,923.5	8	42 730.8	349.5	87.37	6.531	52.3	64
Lehigh Coal and Navigation Company,	419.189	*224.25	1.869	1,162	360.7	4	104,797.25	10	41,989	290.5	116 2	3.840	109	164
G. B. Markle & Co.,	472.635	*215.75	2,190.6	915	516.5	4	118,158.75	2	236,317.5	228.75	457 5	8 552	55.26	120
Upper Lehigh Coal Company,	365,180	*227.5	1,619.2	546	669	2	182 590	8	52,168	265	75.85	6,133	59.54	87
J. Leisenring & Co.,	337,427	*243.5	1,385.3	668	505 1	3	112 475	5	67,485.4	222.6	133 6	6 422	52.5	80
Ebervale Coal Company,	257,383	*214	1,207.7	440	584.9	1	257,388	8	32.173	440	55.5	3.811	67.5	50
I. C. Haydon & Co.,	242 379	*231	1,049.3	475	510.27	1	242,379	7	34.625.6	475	79.15	4 507	53.7	67
G. N. Myers & Co.,	185,074	*243	761.6	389	457.7	2	92,537	4	46,268.5	194 5	97.5	4,421	54.9	42
Pardee Bros. & Co.,	239 032	*235	1,017	445	537.15	3	79,677	3	79.677.3	148.3	148 3	1.940	123.2	58
Stout Coal Company,	120,793	*174	694.2	274	441.5			3	40,264 5		91.3	969	124.6	36
Miscellaneous Coal Companies,	1,158 302	*215.4	548.5	2,825	410.3	10	115,830	32	35,884	282	88.2	23 523	49 2	370
Total number at actual mining and preparing coal,				11,565										
Men employed at stripping and collieries not shipping coal during 1882,				733										
	5,360,497	*221	24,256†	12 298	464	40	134,012	136	39 415	307	90	‡91,880	58.3	1,455

* Average number of days worked.

† Number of tons produced for each of the average 221 days counted worked in this district during 1882. If the district could average 275 days' work in any one year, it is capable of producing 6,770,400 tons.

‡ Ninety-one thousand eight hundred and eighty kegs of powder is equal to 2,297,000 pounds 1,070 tons.

TABLE No. 12.—*Showing the number of openings, breakers, boilers, and horse-power at each colliery; also approximate number of tons of water pumped to surface at each colliery every 24 hours; capacity of all pumps discharging to surface at each colliery every 24 hours; approximate number of tons of water pumped to the surface at each colliery during the year 1882, and the approximate average tons of water pumped to the surface at each colliery for every ton of coal produced.*

A. PARDEE & CO.

Name or Number of Collieries.	Number and kind of Openings at each Colliery.						Total number of openings at each colliery.	Number of breakers.	Number of cylindrical steam boilers at each colliery.	Estimated horse-power of hoisting pumping engines, &c., at each colliery.	Approximate number of tons of water pumped to the surface at each colliery every twenty-four hours.	Capacity in tons of all pumps discharging to surface at each colliery every twenty-four hours.	Approximate number of tons of water pumped to surface at each colliery during 1882.	Total coal production in tons at each colliery during 1882.	Approximate number tons of water pumped to surface for each ton of coal produced.
	Surface Openings.				Inside Openings.										
	Slopes.	Shafts.	Tunnels.	Drifts.	Slopes.	Tunnels.									
Hazleton Mine,	2	...	...	..	1	1	4	1	27	985	1,390	8,879	507,350	92,106	5.5
Laurel Hill,	2	...	...	..	1	1	4	1	36	1,500	8,899	18,859	3,248,135	91,556	35.4
No. 3,	1	...	...	..	...	...	1	1	30	900	4,492	12,537	1,639,580	57,081	28.7
No. 6,	1	...	...	..	...	...	1	1	10	435	1,468	3,525	535,820	156,237	3.4
Cranberry,	1	..	...	...	1	3	5	1	25	570	5,076	14,405	1,852,740	121,888	15
East Crystal Ridge,	1	...	...	...	...		1	1	19	555	5,103	10,245	1,862,595	56,088	33
East Sugar Loaf,	2	...	...	...	...	2	4	1	39	1,107	4,758	11,013	1,736,570	44,252	39
South Sugar Loaf,	1	...	...	...	...	1	2	1	16	385	2,655	7,050	969,075	54,519	17.7
	11	...	...	...	3	8	22	8	202	6,437	33,841	86,513	12,351,965	673,727	18

COXE BROTHERS & CO.

No. 1, Drifton,	1	...	...	...	1	1	3	1	21	701	1,612	3,770	588,382	223,929	2.6
No. 2, Drifton,	1	...	...	1	...	...	2	1	18	795	2,304	5,529	840,960	237,998	3.5
No. 3, Drifton,	1	...	...	...	1	...	2	1	9	190	624	3,546	227,760	30,373	7.5
Gowen,	2	1	...	...	...	2	4	1	10	310	.....	.....	.....	55,229	
Tomhicken,*	3	1	...	...	...	...	4	1	6	125					
Derringer,*	2	...	2	...	1	...	5	1	10	245					
Beaver Meadow,*	4	...	...	...	...	...	4	1	6	405					
	14	1	2	1	3	3	24	7	80	2,771	4,540	12,845	1,657,102	547,529	3

LINDERMAN, SKEER & CO.

No. 1, Stockton,	1						1	1	12	280	825	3,500	301,125	62,363	4.8
No. 2, Stockton,	1						1	1	18	500	2,769	4,000	1,010,685	64.606	15.6
No. 3, Stockton,	1						1	1	26	450	4,692	9,384	1,712,580	83,851	20.4
No. 5, Stockton,	2						2	1	36	910	8,764	13,686	3,198,860	122,097	26.2
	5						5	4	92	2,140	17,050	30,570	6,223,250	332,917	18

LEHIGH COAL AND NAVIGATION COMPANY.

No. 3,	1	1	1	2		3	8	1	25	1,395	3,790	10,990	1,383,355	123,216	11
No. 4,	1						1	1	31	3,598	5,959	16,659	2,175,035	136,297	15
No. 5,			2			1	3	1	15	1,004	2,968	9,388	1,083,320	76,330	14
No. 6,†	2			1		1	4	1	10	122				83,346	
No. 9,‡				1	1		2	1	19	972		9,839			
Screen building,								1	26	520					
	4	1	3	4	1	5	18	6	126	7,611	12,717	46,876	4,641,710	419,189	11

G. B. MARKLE & CO.

Oakdale, No. 1,	1						1	1	22	824	4,794	9,050	1,749,810	117,205	14.9
Oakdale, No. 2,	1						1	1	39	1,938	6,250	12,800	2,281,250	126,600	18
Highland, No. 1,	1						1	1	22	830	2,010	4,156	733,650	104,358	7
Highland, No. 2,	1						1	1	22	703	2,575	5,520	939,875	124,472	8.3
	4						4	4	105	4,295	15,629	31,526	5,704,585	472,635	12

UPPER LEHIGH COAL COMPANY.

No. 2,	3				2		5	1	32	977	2,960	7,535	1,080,400	198,579	5.4
No. 4,	2						2	1	22	580	1,248	7,150	455,520	166,601	2.7
	5				2		7	2	54	1,557	4,208	14,685	1,535,920	365,180	4

* Tomhicken, Derringer, and Beaver Meadow shipped no coal during 1882.
† No. 6. There is no pumping needed in this place.
‡ No. 9 has been idle during 1882 on account of the fire.

TABLE No. 12.—*Continued.*

J. LEISENRING & CO.

NAME OR NUMBER OF COLLIERIES.	NUMBER AND KIND OF OPENINGS AT EACH COLLIERY.						Total number of openings at each colliery.	Number of breakers.	Number of cylindrical steam boilers at each colliery.	Estimated horse-power of hoisting and pumping engines at each colliery.	Approximate number tons of water pumped to surface at each colliery every twenty-four hours.	Capacity in tons of all pumps discharging to surface at each colliery every twenty-four hours.	Approximate number of tons of water pumped to surface at each colliery during 1882.	Total coal production in tons at each colliery during 1882.	Approximate number tons of water pumped to surface for each ton of coal produced.
	SURFACE OPENINGS.				INSIDE OPENINGS.										
	Slopes.	Shafts.	Tunnels.	Drifts.	Slopes.	Tunnels.									
No. 2,	1	...	...	..	3	1	5	1	22	420	5,150	15,650	1,890,700	176,795	10.6
No. 5,	1	...	...	...	2	1	4	1	18	345	2,980	6,500	1,088,700	160,632	6.7
	2	...	...	..	5	2	9	2	40	765	8,130	22,150	2,979,400	337,427	8
EBERVALE COAL COMPANY.															
Nos. 1 and 2,	2	...	...	...	..	...	2	1	51	994	9,240	17,087	3,372,600	147,105	22.9
Nos. 3, 5, and 6,	3	...	...	...	...	...	3	1	19	450	4,889	9,500	1,784,485	110,278	16.2
	5	...	..	..	...	...	5	2	70	1,444	14,129	26,587	5,157,085	257,383	20
J. C. HAYDON & CO.															
No. 1,	1	...	...	...	..	1	2	1	21	315	5,776	11,025	2,108,240	....	...
No. 4,	1	...	...	...	...	1	2	1	18	270	3,840	5,120	1,401,600	119,568	11.7
Nos. 5 and 7,	3	...	..	...	...	1	4	1	28	495	6,160	11,084	2,248,400	122,811	18.3
	5	..	...	..	...	3	8	3	67	1,080	15,766	27,229	5,758,240	242,379	23
G. H. MYERS & CO.															
No. 5,	2	...	...	...	...	1	3	1	30	480	6,520	8,750	2,379,820	86,412	27
No. 6,	1	..	..	1	1	.	3	1	27	426	5,546	7,840	2,024,290	98,674	20
	3	..	..	1	1	1	6	2	57	906	12,066	16,590	4,404,110	185,086	23

STOUT COAL COMPANY.

No. 5,	1						1	1	13	160	436	900	195,140	39,750	4
No. 7,	1						1	1	17	550	1,228	2,560	448,220	81,043	5
	2						2	2	30	610	1,664	3,460	607,360	120,793	5

PARDEE, SONS & CO.

No. 1,	1						1	1	14	280	2,160	3,900	788,400	112,179	7
No. 2,	1						1	1	12	240	2,470	4,200	901,550	126,853	7
	2						2	2	26	520	4,630	8,100	1,789,950	239,032	7

MISCELLANEOUS COMPANIES.

Hollywood, C. Pardee & Co.,	2						2	1	27	465	2,425	10,500	885,125	125,841	7
Mount Pleasant, Pardee, Sons & Co.,	4						4	1	37	1,024	3,625	13,266	1,323,125	143,373	9
Sandy Run, M. S. Kemmerer & Co.,	1				2		3	1	20	536	1,452	5,570	529,980	181,759	2.8
Humboldt, Linderman, Skeer & Co.,	1						1	1	13	362	1,382	2,650	504,430	87,730	5.8
Black Ridge, Black Ridge Coal Company,	1					2	3	1	12	350	2,880	6,240	1,051,200	63,694	16
Beaver Brook, C. M. Dodson & Co.,	2						2	1	34	813	5,888	15,664	2,149,120	99,367	21
Tresckow, E. B. Leisenring & Co.,	2					1	3	1	32	600	6,400	17,540	2,336,000	135,605	17
Buck Mountain, B. M. Coal Co.,	3				2		5	1	34	550	3,191	6,082	1,164,715	108,906	10
Coleraln, W. T. Carter & Co.,	2				2	1	5	1	32	540	4,784	8,425	1,746,160	153,360	11
Harleigh, T. S. McNair & Co.,	2				4	1	7	1	26	903	5,459	11,124	1,992,534	88,646	23.4
*Pond Creek,	1						1	1	6	177					
	21				10	5	36	11	273	6,350	37,486	97,059	13,682,389	1,158,302	11

RECAPITULATION.

A. Pardee & Co., Hazleton,	11				3	8	22	8	202	6,437	33,841	86,513	12,351,965	673,727	18
Coxe Bros. & Co., Drifton,	14	1	2	1	3	3	24	7	80	2,771	4,540	12,845	1,657,102	547,529	3
Linderman, Skeer & Co., East Sugar Loaf,	5						5	4	92	2,140	17,050	30,570	6,223,250	332,917	18
Lehigh Coal and Navigation Company, Lansford,	4	1	3	1	1	5	18	6	126	7,611	12,717	46,876	4,641,710	419,189	11
G. B. Markle & Co., Jeddo,	4						4	4	105	4,295	15,629	31,526	5,704,585	472,635	12
Upper Lehigh Coal Company, Upper Lehigh,	5				2		7	2	54	1,557	4,208	14,685	1,535,920	365,180	4
J. Leisenring & Co., Council Ridge,	2				5	2	9	2	40	765	8,130	22,150	2,979,400	337,427	8
Ebervale Coal Company, Ebervale,	5						5	2	70	1,444	14,129	26,587	5,157,085	257,383	20
J. C. Haydon, Jeansville,	5					3	8	3	67	1,080	15,766	27,229	5,758,240	242,379	23
G. H. Myers & Co., Yorktown,	3			1	1	1	6	2	57	906	12,066	16,590	4,404,110	185,086	23
Stout Coal Company, Milnesville,	2						2	2	30	610	1,664	3,460	607,360	120,793	5
Pardee Bros. & Co., Latimer,	2						2	2	26	520	4,630	8,100	1,789,950	239,032	7
Miscellaneous companies,	21				10	5	36	11	273	6,350	37,486	97,059	13,682,389	1,158,302	11
	83	2	5	6	25	27	148	55	1,215	36,486	181,856	424,190	66,493,066	5,360,497	12

NOTE.—There are 96 surface openings in this district supplying coal to 55 breakers. There was an average of over twelve tons of water thrown to the surface for every ton of coal produced in this district during 1882.

* Pond Creek has been idle during 1882.

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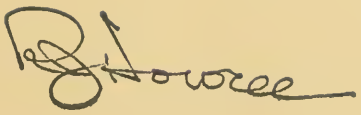
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